

SD Times

SOFTWARE DEVELOPMENT

The Industry Newspaper for Software Development Managers

APRIL 1, 2000

'The Home Depot
Of Components'
Expands Availability 5

HotDispatch:
An Online Exchange
For Problem-Solving 7

IBM Updates OS/390
For Mainframes 7

Software Can
Stay Current
With Online
Upgrades 8

'TestMyBeans'
Suite Examines
EJB Middleware 8

NTP Eases Way For
Change in Applications
Management 9

Host Integration Server:
Microsoft's Revamped SNA . . 11

Wind River Plots
Future Direction
For VxWorks, pSOS 13

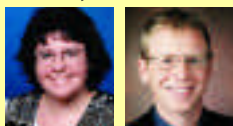
Internet Explorer
For Pocket PC
In Development 13

Lineo Partners
With emWare,
Insignia 15

They're Busy at BEA
With Products, Alliances ... 18

Object Studio For
Windows 2000 Tops
Rogue Wave Upgrades 19

A Special Report:



E-Business Forces
Developers to Redefine
Systems Security 21

Sun Tries to JAAS Up
Security for Java 2 23

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SOFTWARE PIRACY COSTS BILLIONS

Impact on ISVs devastating, says trade group

BY DAVID RUBINSTEIN

News flash: The FBI has arrested the founding member of the piracy ring Pirates With Attitude, after a tip by an informant led them into the group's hidden site, where agents found a list of the group's leaders.

News flash: Microsoft Corp. has filed software piracy lawsuits against four Massachusetts companies and also has filed suit in Mississippi and Alabama, charging copyright infringement and trademark violations.

Software piracy is no small issue. The amount of lost revenue from sales totals \$11 billion each year, according to the trade group Software & Information Industry Association (www.siiia.net). And that doesn't even address educational and

entertainment software. A report by the Business Software Alliance (www.bsa.org) claims that in 1998, U.S. piracy alone cost the economy 109,000 jobs, \$4.5 billion in wages and nearly \$1 billion in lost taxes. According to the group, 1 out of every 4 pieces of software used in the U.S. is pirated.

"Piracy is a serious threat to entrepreneurs, investors and customers," said Joyce Plotkin of the Massachusetts Software Council Inc. (www.swcouncil.org).

ONE STEP AHEAD

With the arrest of the Pirates With Attitude ringleader, one of the larger rings was brought down, according to SIIA's Mike Flynn, manager of the Internet

► continued on page 30

Set Your Defects Free

SOFTWARE EMANCIPATION OFFERING QUALITY-ASSURANCE SERVICES

BY ALAN ZEICHICK

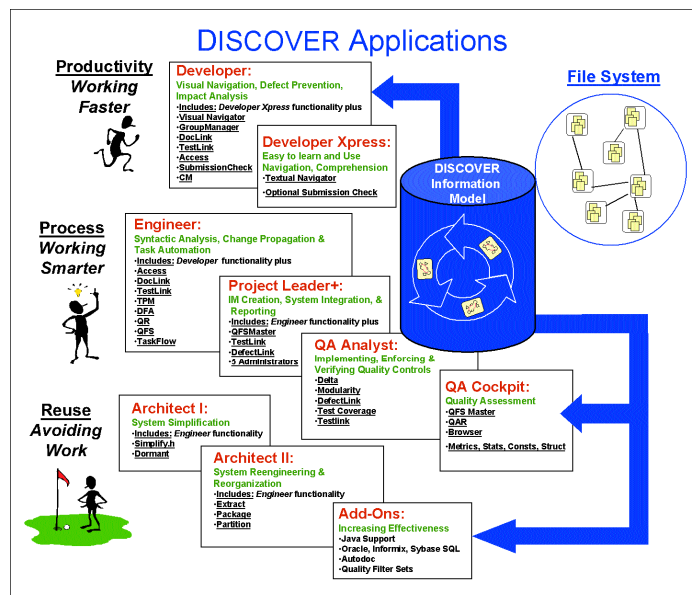
"We're moving from quality control to quality assurance," said Bruce Boes, marketing vice president at Software Emancipation Technologies Inc.

Citing the common figure that it costs \$10,000 to fix a bug if a customer identifies it, but only \$1,000 if it's caught in testing or \$100 if corrected during development, Boes unveiled details of the company's new defect-testing service, Magnify.

The Burlington, Mass.-based Software Emancipation (www.setech.com) is known for its quality-assurance products, including its flagship Discover test suite, which performs quality analysis of ANSI C/C++, Java, and Oracle, Sybase and Informix SQL code under Unix and Windows NT.

According to Boes, Discover interprets the source code, producing a model of how the

► continued on page 30



The Discover test suite from Software Emancipation Technologies is designed for quality assurance, not merely quality control, according to marketing vice president Bruce Boes.

Java a Hot Topic at Embedded Systems Conference

New product rollouts abound; attendance way up as companies compete for market share

BY EDWARD J. CORREIA

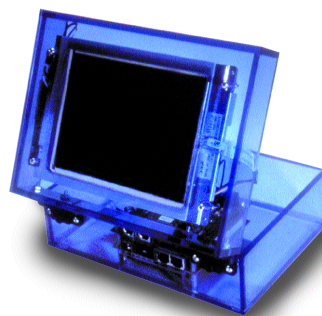
CHICAGO — Java was a dominant theme at last month's Embedded Systems Conference East, with exhibitors touting capabilities from simple support to pure Java real-time operating system (RTOS) kernels.

Attendance was up at the conference, held at the McCormick Convention Center here. Conference officials estimated the combined crowd of exhibitors and attendees numbered around 6,000; an exact breakdown was not available at press time. The show was estimated to draw roughly 3,950 at-

tendees, a significant increase over last year's estimated 3,000.

GET YOUR JAVA

Esmertec ag (esmertec.com), a Switzerland-based company, has released Jbed, an RTOS kernel and Java Virtual Machine (JVM) for Motorola PowerPC and 68K processors written in 100% Pure Java. The main advantages of a pure Java kernel, according to the company, are small size, fast execution and dynamic Java class loading. Jbed can be stored in as little as 8K bytes of memory and runs compiled (not interpretive) Java, which adds speed and reduces its footprint. The full operating system and developers kit is available for \$9,800 plus a volume-based royalty. The product supports C linking, and versions for ARM and NET+ARM processors are expected this month



The Blue Planet development platform enables Windows CE prototyping.

with Intel and MIPS processors to follow, the company said.

Making two Java-related announcements was Espial Group Inc., based in Ottawa (espial.com). The company released what it claims to be the world's first PersonalJava RAD environment, plus a full-featured Web browser in a sub-800K footprint. Espial Architect 2.0 features a drag-and-drop interface

with automatic code generation and target device simulations. The environment for Windows and MacOS integrates with popular integrated development environments, including CodeWarrior and Visual Café. The company also announced the availability of Escape 4.0, a Web browser aimed at set-top boxes, automotive systems, Web pads and similar Internet-connected devices running most popular embedded systems, including Windows CE, Linux, VxWorks, QNXOS, EPOC32, Microware OS09 and pSOS. The SSL-compliant browser supports HTML 4.0, forms, frames, tables, applets, JavaScript and cascading style sheets.

Artisan Software Tools Inc. (www.artisansw.com) released version 3.1 of its Real-Time Studio modeling suite, a set of tools designed to enable soft-

► continued on page 14

“So the challenge here was knowing the speed of how quickly we had to bring shoe vendors online.”

“We went from 6 to 10 to 20 vendors and we’re continuing down that road.”

“So how do we rapidly do the development to make all this happen?”



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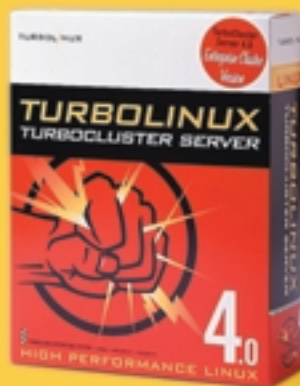
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'The Home Depot of Components'

Vendors expanding availability, markets for software pieces

BY DAVID RUBINSTEIN

Say you want to add a dormer onto your house. You could go to a lumberyard, buy the wood, climb up a ladder, rip the roof and stud out the framework. This, of course, is time-consuming and costly. Or, you could sub the job out to a company that will build the entire shell in a fraction of the time it would take you, leaving you to finish only the plumbing, electrical work and décor...the fun stuff that was really the only part you were interested in anyway.

Now, let's say you're building an application and you need data encryption. You can have your development team spend a few hundred hours writing and testing code, or you can buy the functionality "off the shelf" and save, save, save.

The folks at ComponentSource are counting on you to buy and save rather than build and spend, and they have built a burgeoning business selling off-the-shelf, ready-to-use software components.

"It's like having a two-by-four," said Bill Wilkerson, vice president of market development for ComponentSource (www.componentsource.com). "You can build a house anywhere with it, because the building code calls for beams that are two-by-four."

Wilkerson, in fact, calls ComponentSource "the Home Depot

of components." He said ComponentSource has more than 200 component-authoring companies supplying the pieces, and there are more than 2,200 components available from its Web site.

ComponentSource is making component shopping even easier by allowing companies to link to its catalog from an intranet via a new set of Extensible Markup Language interfaces, which are available in beta. This, the company said, is the first step toward allowing companies to seamlessly integrate their own development environments with the ComponentSource online component repository.

"Also, anybody who does internal development can post to our repository and everyone in their network can have access to them," explained ComponentSource CEO Sam Patterson. Further, Patterson explained, ComponentSource will make a company's in-house component available on the open market if the company so desires.

The concept of developing software applications with the use of components has been around for at least two decades—beginning with people trying to resell COBOL subroutines. The problem was that there was a limited number of platforms upon which you could use them.

Today, with the number of systems supporting either Win-

dows or Java, the market for components has exploded. The key to this, according to one component vendor, is the widespread use of these platforms as well as interoperability between components.

Dave Rice, director of product marketing at component vendor Rogue Wave Software Inc. (www.roguewave.com), cited several factors that are ratcheting up the use of components. "We have seen a migration of the developer population getting away from a 'not invented here' bias," Rice said. "Time-to-market has become the overriding issue."

Another advantage to component use, he claimed, is that the customer base creates "a testing, feedback and optimization cycle that would take an individual developer a tremendous amount of time to develop on their own."

"You need data encryption? We have about 15 components for that," he said. "We have about five different credit-card authorization components."

Wilkerson cited statistics that, he said, show it costs a company between \$8,000 and \$11,000 per programmer-month for a system engineer to do coding.

Today, he said, for about \$250, a company can buy components needed to do certain routines, dramatically lowering a company's costs while speeding up developments. "Why

Studio for in-house-use," said Ballmer, adding, "Now's the time to release those products into the mainstream."

Also announced on April 1 was that the forthcoming Windows Millennium Edition (Windows ME) is actually based on the Linux kernel, with DOS, Win16 and Win32 compatibility layers and a port of the Windows Explorer user interface.

"We'll be releasing the Windows compatibility source code for all major Linux and Unix ports," said Ballmer, singling out Sun's Solaris as the next target for Microsoft's full line of business software.

"Look for our own branded version of Linux to be released next year as a separate product," he added, hinting, "Now's the time to bring back the Xenix brand," referring to Microsoft's version of Unix, available in the late 1980s. ■

spend one-and-a-half months rewriting an application when you can buy the component off the shelf and be operable in one-and-a-half hours," Wilkerson said.

Companies prefer to focus on a specific business problem rather than issues based on broad development, Rice said. "With horizontal problems, we can and do invest significant resources to a much greater extent than a single customer would be able to do," he said.

Aside from making components available for sale, ComponentSource performs testing and product review, giving its seal of approval. And, it works with component authors to define the component, its potential sale price and any licensing requirements that must be considered.

Wilkerson sees a strong demand for EJB components, because, he said, most corporate CIOs see Solaris as a more stable platform than Windows, based on anecdotal information. In Europe, he said, the reverse is true. There have not been many requests for components for Linux as yet, he said. Rice, on the other hand, said his company is seeing significant development projects in Fortune 500 companies based on Linux.

Wilkerson said ComponentSource is working with the Object Management Group Inc. (www.omg.org) as a sponsor of its component interoperability clearinghouse. "Standards will further drive and mature the market if the federal government adopts them." ■

STARBASE CAPTURES PREMIA

Move aimed to add resources, fuel growth

BY DOUGLAS FINLAY

AND DAVID RUBINSTEIN

Looking to reinforce its lineup of e-collaboration products while broadening its reach into the e-commerce application marketplace, StarBase Corp. has acquired software development company Premia Corp. in an all-stock transaction of 1.9 million shares worth an estimated \$24.7 million.

The acquisition will immediately strengthen StarBase's enterprise collaboration and configuration management family, StarTeam, through the addition of Premia's CodeWright source-code management application.

StarBase CEO Bill Stow expects the Premia acquisition to speed the growth of StarBase in the collaborative-development market.

"Premia has outstanding products and technology," Stow said. "For us to take advantage of our position in the sweet spot of the e-business world, we have to grow fast. Our orders have outpaced our sales force. Premia, which already has a large tele-sales staff in place, will help us move that much more quickly."

Stow pointed out the difficulty of finding top software engineers to help a company expand, and said bringing in Premia's staff of engineers will give StarBase a broader talent pool from which new solutions can rapidly develop.

The acquisition positions StarBase (www.starbase.com) to extend its reach into Premia's customer base, claimed

to be more than 20,000 organizations.

"We realized the notion of collaborative tools a long time ago," Stow said. "Although we were seen as a software configuration management company, competing against the likes of Rational, we never saw ourselves that way. We always were positioned for worldwide collaboration of digital products."

The acquisition infuses StarBase's management team with a fresh shot of expertise: Premia co-founders Don Kinzer and Eric Johnson join StarBase as chief architects. Doug Root, Premia's director of sales and marketing, will be the company's vice president of marketing communications.

Kinzer and Johnson created the popular CodeWright program, now seen as a complement to StarBase's StarTeam product line. CodeWright is currently popular among developers using Microsoft's Visual Studio, Inprise's C/C++ and J Builder, as well as IBM's Visual Age integrated development environments.

Stow said his company will sell the StarBase and Premia products independently, and plans to offer an integrated model in the future. Technical support remains available for Premia products. "We plan to grow the Beaverton center rapidly," Stow said of the current Premia headquarters. "There are quality people there all across the board." ■

Xenix Returns

MICROSOFT EMBRACES, EXTENDS OPEN-SOURCE MOVEMENT

BY I.B. PHOOLEN

APRIL 1 — In a dramatic change in direction, industry giant Microsoft Corp. has publicly pledged to embrace the open-source software movement. Unveiling the company's new Linux initiatives, president Steve Ballmer decreed, "The days of proprietary solutions are over."

Sharing a stage with GNU Project founder Richard Stallman at the Massachusetts Institute of Technology, Ballmer announced that the company will be releasing its Windows 2000 operating system as open source, subject to the GNU Public License. "We made this decision last summer," said a company spokesman.

Under the terms of the new Windows license, software discs

for Windows 2000 Professional and Server will be available for \$35 for executable code only, and \$70 for a two-disc set containing source code. Following usual open-source community practice, support will not be included in the package. Customers wishing support can subscribe to a support contract.

Ballmer also demonstrated the company's forthcoming Microsoft Office 2000 and Visual Studio 7 for Linux. "Many of our developers are Linux enthusiasts," he disclosed. "They've been running Linux on their development stations for two years. Not only is Windows 2000 itself written in Visual J++, he said, "but we've also created native Linux versions of Office and Visual

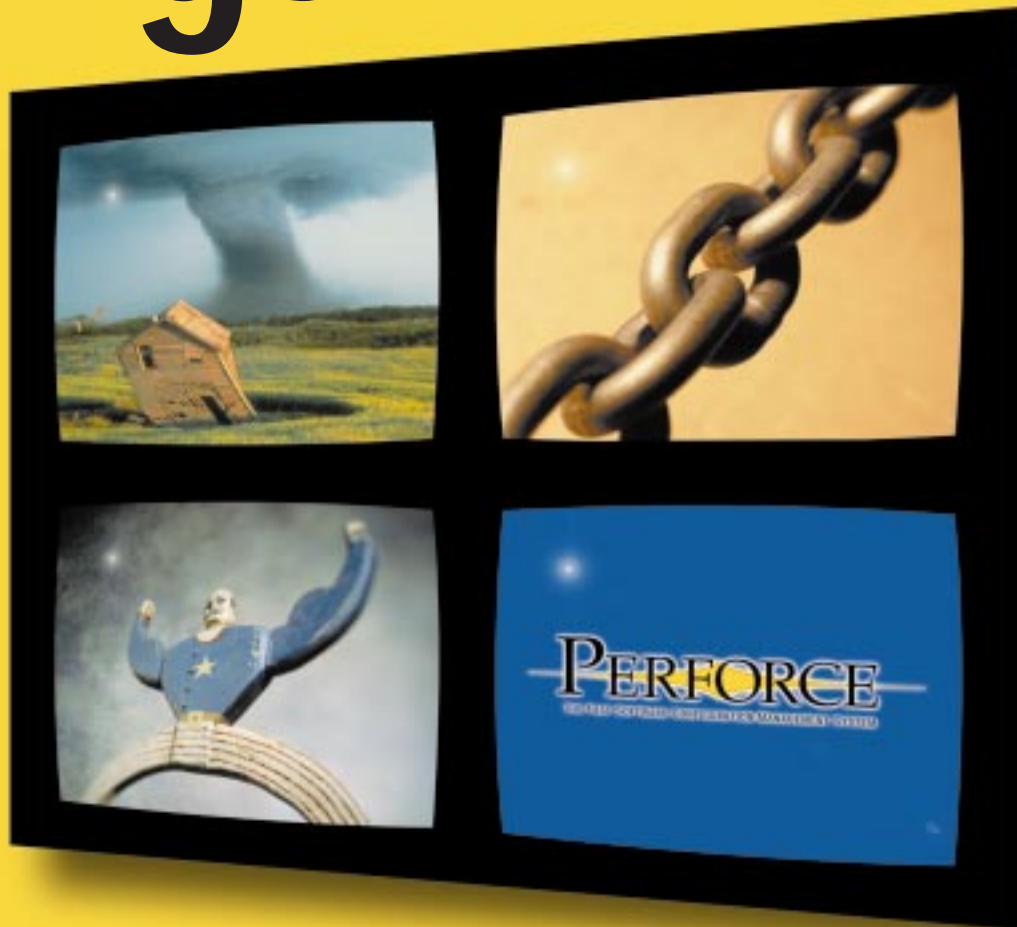
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News Briefs

COMPANIES

IBM Corp. has joined with **Cisco Systems Inc.** to provide Cisco customers with IBM's host integration software, providing Web access to applications and data that reside on host computers. IBM's host integration products included in Cisco's Enterprise Associates Program are IBM Host On-Demand, IBM Personal Communications and IBM Host Publisher. Cisco customers who purchase (or have purchased) a TN3270 server can receive 50 no-charge licenses of IBM Host On-Demand, which provides Java-based terminal emulation from a standard Web browser . . . **Prolifics**, a division of **JYACC Inc.**, has released **Rose Panther Link**, a Windows-based add-on to **Rational Software Inc.**'s **Rose UML** modeling tool, which integrates Rose with Prolifics' Panther component tool . . . **Concurrent Computer Corp.** promises to create a Linux version of its **NightStar** development tools and its C/C++, FORTRAN and Ada compilers. It will also release a Linux version of its **PowerHawk** integrated real-time computer system . . . **ChiliSoft Inc.** has released **ASP** for Linux, which provides compatibility with Microsoft's **Active Server Pages** format . . . A new alliance and reseller agreement between **BMC Software Inc.** and **Deloitte Consulting** means that BMC solutions will be installed into Deloitte's network of global solution centers as well as sold to Deloitte's customers. BMC has also launched its **Affinity Partner Program** to increase customer awareness of its collaborative efforts with ISV and ASP partners. Its new **Software Developer Connection**, formerly **Patrol Developer Network**, offers tool kits to aid in product development . . . **Sun Microsystems Inc.** has released the **Java APIs** for **Extensible Markup Language Parsing**, also known as **JAXP**; the APIs are available for free download from Sun's **Java 2 Web site** . . . **Shaman Corp.** has new software that closes the security holes that allow the placement of "zombie" agents. These updates stop hackers' ability to secretly link networked computer systems in distributed denial of service (DDoS) attacks . . . **SAGA Software Inc.** is providing **Red Oak Software** use of the **Stingray** and **Mako** technologies that SAGA acquired from **Blue Lobster Software**, from where Red Oak's principals came. **Stingray** is a Java-based legacy integration solution for Web-enabling and programmatically automating 3270 and 5250 terminal applications. **Mako** automates the development of Java applications that incorporate **CICS** transactional access . . . **SCORT Software** has teamed with **GartnerGroup Inc.** and **Computer Generated Solutions** to deliver forums on developing legacy-enabled e-business applications. The "Legacy Enabled E-Business Applications" Forum debuted in New York on March 8, with sessions in New Jersey, Chicago, Dallas, Atlanta, Los Angeles and Washington, D.C., to follow . . . In the wake of its recent merger with **Corel Corp.**, **Inprise Corp.** has entered into an agreement to sell its **Scotts Valley** facility for \$47 million. As part of the agreement with **ScalanKemperBard**, Inprise will lease back 44 percent of the facility . . . **BizSpace Inc.** has launched **ASPconnection.com**, a daily news and information source for the ASP industry . . . **Citrix Systems Inc.** has acquired **Innovex Group** for approximately \$47.8 million in cash. **Innovex** is a privately owned e-business consulting service organization specializing in the design, development and implementation of Web-based solutions and systems integration . . . Under a **Sequoia Software Corp.** and **Semio Corp.** partnership, **Semio's** multilevel directory structure will be integrated into **Sequoia's XML Portal Server**, giving customers the ability to conduct precise searches against text-based portal content . . . **Oracle Corp.** has joined the **HR-XML Consortium**, a nonprofit group that will work toward the development of a standard set of XML vocabularies for human resource-related matters, including the posting of job openings to job banks and employment agencies . . . **Metrowerks Corp.** has established the **Metrowerks Professional Group** to deliver consulting and training services to customers using **CodeWarrior** products and technology.

► continued on page 18

An Exchange for Problem-Solving

New CEO at HotDispatch sets course for online solutions

BY DAVID RUBINSTEIN

HotDispatch Inc., provider of a Web-based service where companies post problems and experts earn cash for offering solutions, recently announced the appointment of Mike Kaul as its new CEO, charged with the mission of extending the company's vision of, as he called it, "an online, digital trading floor for the exchange of intellectual property."

Here's the scenario, according to Kaul. A developer with a problem enters the Web site (www.hotdispatch.com), poses the problem, and says how much his or her company is willing to pay for the solution. Respondents offer solutions, and the requester can choose one. "This answers the questions of 'Who do I pay' and 'How do I get paid,'" Kaul said. When the question is posted, HotDispatch takes the credit-card information from the requester, but charges the card and forwards money to the solution provider (less a 15 percent commission) only after the customer is happy with the results.

This service offers small companies access to the global army of developers, extending everyone's reach, Kaul said. "We fit in the space between the high-end, expensive support that you would pay a vendor for and a [Usenet] newsgroup," said Kaul, who joined HotDispatch after stints with Oracle Corp. and Attachmate Corp.

HotDispatch has been live since October 1999, after it completed a \$6 million round of funding. The plan now, according to Kaul, is to grow the company fast.

"Developers like the notion of helping each other," said A.C. Ross, vice president of marketing at HotDispatch. "Intellectually and emotionally, this fosters an open software environment. Getting [help] from peers has a lot of appeal."

HotDispatch does not require solution providers to register, and today's solution provider might be tomorrow's requester. After getting the solution, a requester can rate the solution provider in terms of working relationship, problem-

solving capabilities and ease of understanding.

HotDispatch ran a Java pilot program with Sun Microsystems Inc. from July to September last year, and Ross said that the problems Sun's own Java developers had were solved thoroughly in a short amount of time. Ross boasted that HotDispatch is the only third party linked from Sun's Java site (java.sun.com).

Kaul said the response from software vendors has been positive. Many are small companies that cannot afford to spend large amounts of time and money on technical support. The responses are being archived, Kaul said, and could be shared, depending upon the partnership relationship with HotDispatch.

The long-term vision, Kaul said, is to provide just-in-time solutions that will accelerate the software development process. "We can punch through a problem so much more quickly with the resources we have that it will speed the development process," he said. ■

IBM UPDATES ITS MAINFRAME OPERATING SYSTEM

New OS/390 2.9 adds features for e-business, host-to-Web integration

BY ALAN ZEICHICK

Microsoft Corp. and Sun Microsystems Inc. aren't the only major vendors to update their flagship operating systems in the first quarter. In early March, IBM Corp. released an upgrade to its OS/390 operating system for its S/390 G5 and G6 server family.

Combined with hardware enhancements, says IBM, OS/390 2.9 improves system scalability, as well as the management and integration of multiple diverse workloads in a secure environment.

"Business process and application integration is critical to the speed-to-market requirements of e-business," said Mark Shearer, vice president of marketing for IBM's enterprise servers. "IBM is providing a fast track to exploiting the Web with tools and applications that integrate existing applications and systems. Today's top application developers are being attracted to IBM's enterprise servers for their ability to

manage the scalability and availability requirements of e-business," he said.

New electronic commerce features of OS/390 2.9 focus on improved support for porting Unix C and C++ code to the mainframe, using a new Language Environment and OS/390 Unix System Services support. The Language Environment and Unix System Services will now support 64-bit integers. These enhancements, says IBM, will make it easier for customers and solution developers to port Unix applications to the S/390 server platform.

IBM's WebSphere Application Server for OS/390 has also been enhanced as part of this new operating system upgrade. WebSphere now supports new industry standards for Java Server Pages and Servlets. New OS/390 2.9 enhancements include support for WebSphere Studio Tooling and VisualAge for Java Tooling. Other OS/390 2.9 enhancements include access to

DB2 data via the Java DataBase Connectivity (JDBC) protocol.

As IBM continues to position its S/390 mainframes as servers rather than data crunchers, new LAN and PC integration features in OS/390 2.9 bolster that claim. The company cites new native file and print server support for Windows-based workstations, using Microsoft's Server Message Block (SMB) protocol.

The operating system now takes advantage of IBM's PCI Cryptographic Coprocessor (PCICC), an optional feature of S/390 G5/G6 Enterprise Servers. According to the company, use of a hardware-based crypto coprocessor improves the performance of secure Web sites: the PCICC card is claimed to increase the performance of SSL-based Web page serving by a factor of six.

OS/390 2.9 was scheduled to be generally available on March 31, and the S/390 G5 and G6 server enhancements will be available on June 30. ■

LightWork Design Ships MachineWorks 4.1

Developers of 3D computer-aided manufacturing applications using LightWork Design Ltd.'s rendering and CAD engines can now integrate solids-based five-axis and wire-Electrical Discharge Machining (EDM) capabilities into their applications, thanks to a new version of the company's MachineWorks computer numerical control (CNC) simulation and verification tool kit for Unix and Windows workstations.

MachineWorks version 4.1 now can perform vertical arc, helical and non-uniform rational B-spline (NURBS) cuts, and offers expanded tool holder support and rapid collision detection and rest-material identification.

With its new five-axis machining capabilities, MachineWorks 4.1 permits machine simulation and detection of machine-to-stock and machine-to-machine collisions and per-

forms complex integrated stock modeling. Other new capabilities include arc cuts in turning and mill-turn simulation, and chip removal, useful for splitting solids into parts and removing small disconnected areas of a solid after machining.

LightWork (www.lightwork.com) has divided its software-development products into two divisions: Industrial Solutions, including software packages for 3D visualization of models and processes; and the Kazoo Technology Group, providing products that add 3D capabilities to Windows applications.

Based in the U.K., LightWork also has offices in Walnut Creek, Calif. The company markets software solutions for modeling, analysis and verification of the CNC removal process, and also supplies 3D rendering engines and design applications. ■

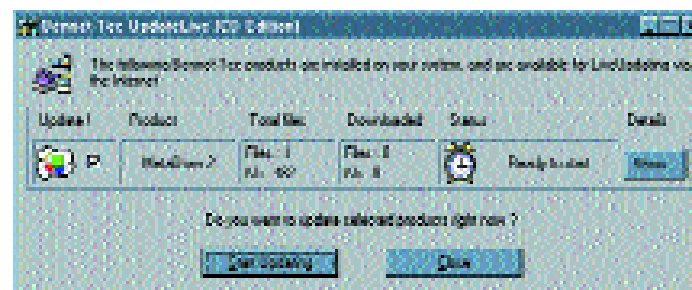
UPDATELIVE KEEPS SOFTWARE USERS CURRENT

Utility uses Internet for electronic delivery of product updates

The bane of existence for software developers is update delivery. A new product from Bennet-Tec Information Systems Inc. uses the Internet to provide a solution. UpdateLive 2.0 is a client-side utility that developers and software publishers can use to keep applications up to date. The product automatically checks an Internet-based file store at predetermined intervals and downloads any available updates.

Bennet-Tec's LiveUpdate 1.0 initially was able to keep only the company's own software current. The new update is designed for use by ISVs, and includes tools to assist ISVs in setting up their Internet servers to support clients needing software updates.

"The goal of UpdateLive is to bolster software sales through increased customer



UpdateLive tells which products are available for updating, the number of files to be downloaded, and offers the ability to preview details of the update before it occurs—via the Internet.

satisfaction by keeping software versions current transparently," said Jeff Bennett, president of Bennet-Tec (www.bennet-tec.com).

"Software feature enhancements and bug fixes may be deployed as soon as they are developed, helping to minimize technical support costs," he said. "Media and distribution costs also can be reduced through electronic delivery of updates."

UpdateLive is installed along with a software product. If the end user's system has an Internet connection, Bennett said, UpdateLive can either ask

the user if an update check is desired or it can check automatically at intervals determined by the ISV.

Files can be checked by version number or date. If updated files are found, a user message is displayed listing the available updates with an option to cancel or proceed. Replaced files are stored in a backup directory to permit process reversal. The utility registers OCXes and runs executables as necessary.

UpdateLive is priced at \$1,500 per application, with server-based volume pricing options available. ■

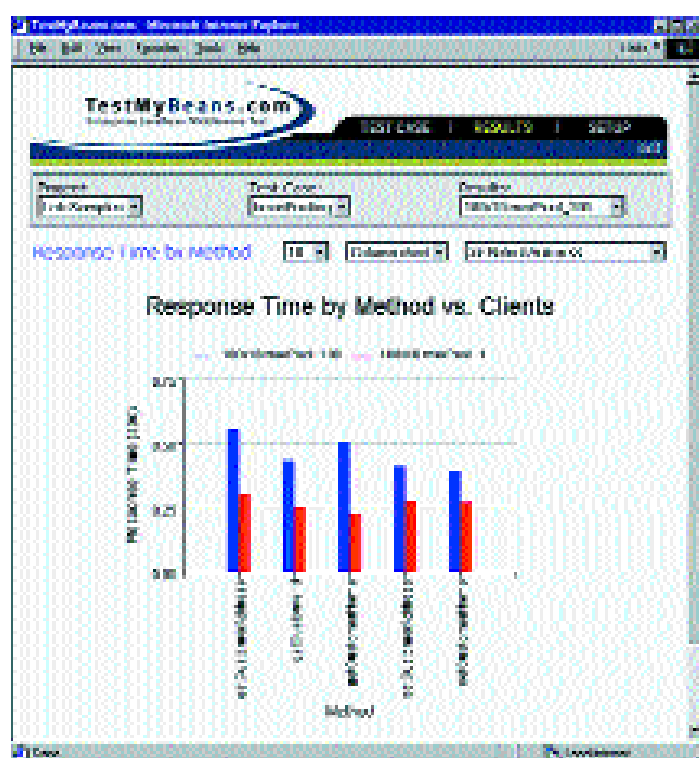
Test Company Teradyne Says, 'TestMyBeans'

New suite examines EJB middleware prior to integration

Will your Enterprise JavaBeans middleware scale? That's the question being asked by TestMyBeans.com, a unit of Teradyne Corp. that claims to offer the industry's first software designed specifically for testing the functionality and scalability of EJB middleware prior to integration.

Part of what complicates the testing of Web-based software is the time required to find and fix problems, said Walter Vahey, general manager of TestMyBeans.com. "E-business developers have had to test their EJB middleware application after it has been integrated," he said. Once JavaBeans are integrated into an application, finding scalability problems "can take months to debug and fix," said Vahey. Enterprise JavaBeans are preprogrammed chunks of business logic that provide developers with a quick means of piecing together enterprise Web applications. The TestMyBeans Product Suite permits developers to isolate and accurately test the JavaBeans apart from the rest of the system application, which, according to the company, has not been done before.

The all-Java product runs on Unix, Linux, Solaris, Alpha and Windows NT platforms and is



TestMyBeans is an all-Java EJB test suite that isolates and tests JavaBeans prior to their integration into an application.

executed through a Web browser. TestMyBeans has been optimized for BEA WebLogic and IBM WebSphere, and was first announced in late February at the BEA Users Conference in San Francisco. According to company reports, developers set up testing by deploying EJB applications on the server or servers and by selecting a de-

ployment descriptor and the number of virtual clients to invoke. Virtual clients can be set up on a single server or multiple servers spread across a LAN or WAN.

Pricing for the TestMyBeans Product Suite begins at \$20,000. Developers can download a free evaluation copy at www.testmybeans.com. ■

ORACLE 8i RELEASE 2 FOR LINUX AVAILABLE IN FREE DOWNLOAD

SECURITY-ENHANCED VERSION WILL ADD JAVA 2, XML SUPPORT

Oracle Corp., maker of the most popular database for the Web, has thrown its considerable weight behind the Linux operating system with the recent announcement of Oracle 8i Release 2 for Linux, which will support Java 2 and Extensible Markup Language (XML) and feature other enhancements for e-business. The product was scheduled to be available on March 16 for free download at technet.oracle.com.

"Oracle 8i Release 2 on Linux will be the ideal open-source answer for companies looking to establish a powerful presence on the Web," said Michael Rocha, senior vice president of Oracle's platform technologies division.

And Web developers, according to company estimates, seem to agree. Oracle says downloads of Oracle 8i for Linux have outpaced those for Windows NT by nearly 20,000. Bolstered by that popularity,

Redwood Shores, Calif.-based Oracle is seeking to be central to the needs of new Internet companies.

According to Oracle, the new version will feature built-in analytical functions for data warehousing, including functions for data ranking ("find the top 10 performers"), creation of moving and cumulative aggregates ("find the 52-week average"), period-over-period comparisons (this year vs. last) and ratio-to-report analysis (one month as a percentage of the year).

The tools are executed as a new set of SQL functions that are being considered by ANSI for addition to the SQL standard. JServer, the integrated Java Virtual Machine in Oracle 8i, now supports Java 2, XML and the Oracle XML Parser for Java. Security enhancements will include protection for data that is in storage and in transit, plus improved LDAP support. ■

NTP Eases Way to Changes in Applications Management

EASE designed to smooth transition to Windows 2000 platform

Looking at developing applications around a central configuration database? NTP Software Inc. thinks it has a better way, with EASE, its Enterprise Application Services Extension. According to the company, EASE is a software foundation for enterprise-wide applications and services that provides a management infrastructure and development platform for distributed enterprise applications. EASE is similar in some aspects to Windows 2000's Active Directory, except that it's focused on centralized applications management, not user, system or network administration. EASE also runs on Windows NT 4 Server.

Active Directory (AD) is the centerpiece of Microsoft Corp.'s Windows 2000 Server operating system. Out of the Windows 2000 box, AD acts as the repository for data about network devices and users, but Microsoft intends to use AD to store application configuration data for future versions of Exchange Server and other BackOffice products. The folks in Redmond also offer Active Directory Service Interface (ADSI), the APIs for third-party and enterprise developers to use the AD data store and management tools for their applications.

Why wait for Windows 2000? That's the message sent by NTP Software (www.ntpsoftware.com), whose EASE is also a hierarchical data store that can be distributed across the enterprise network. EASE-enabled applications can use this data store for their configuration information, and thus can be centrally managed by NTP Software's graphical management tools.

NTP Software positions EASE as a limited replacement for Active Directory, as well as an enhancement to it. Start using it with Windows NT 4, says the company, to store application configuration data. After migrating to Windows 2000 and AD, enterprises can continue to use EASE's management tools, but move the EASE data store to Active Directory in order to exploit the Active Directory data replication mechanism.

"EASE enables organizations to reduce both administrative and development overhead as they make the move to Active Directory," said Bruce Backa, president of NTP Soft-

ware. "The technology EASE delivers is the result of many years of development effort that leverages the high level of technology expertise in our organization addressing the needs

of our clients and the market."

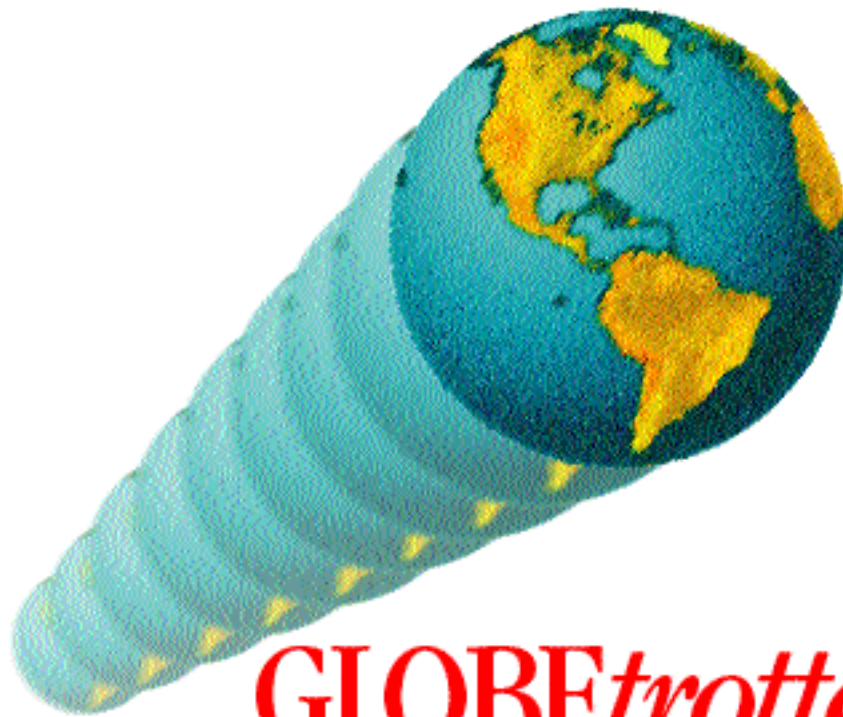
NTP Software plans to configure its own packaged applications to use the EASE environment. One already available is the company's RAS (remote access ser-

vice) Manager. Later this year, the company promises to release an EASE software development kit that allows access to the EASE APIs, integrates customer applications into the EASE user interface and takes advantage of the EASE infrastructure.

The EASE development environment, according to the

company, supplies developers with common code for distributed configurations, enterprise reporting, event management, SNMP reporting and e-mail integration. The EASE API is based on Microsoft COM and DCOM, and supports C/C++, Java, Visual Basic, VBScript, JScript, Perl and FoxPro. ■

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Microsoft Revamps SNA Server

New Host Integration Server adds application, data, network connectivity

BY ALAN ZEICHICK

There's more to Microsoft Corp.'s update to its SNA Server suite than just a new moniker. The newly named Host Integration Server 2000, which entered its first beta in late February, promises to add application, data and network connectivity features beyond that available in SNA Server 4, Service Pack 3. According to Microsoft, a second beta is planned for mid-spring, with general availability this summer.

"With Host Integration Server 2000, Microsoft is helping customers solve their challenging integration needs. This product provides a consolidated offering that focuses on a wide range of integration technologies," said Chris Olson, group product manager at Microsoft. "In addition, it extends the Windows DNA 2000 platform to embrace host systems and allows our customers to choose the technology appropriate for their unique integration needs."

According to Microsoft, Host Integration Server 2000 will provide support and integration tools for back-end and host systems through increased ease of configuration for DB2 access, COM+ support for integrated CICS/IMS transactions, plus support for Microsoft Message Queuing Services 2.0 and IBM's MQSeries 5.1 for messaging-oriented middleware integration.

"There's a lot of new technology in Microsoft's Host Integration Server," said Hebert David, group marketing director of WRQ Inc.'s Reflection family of host-access software. "It says [Microsoft] wants to make the Windows server platform more interoperable. The SNA component is still valuable, but the vision behind Host Integration Server—the vision that there's something greater than an SNA gateway—is excellent for Microsoft and the market. They're charting a larger vision of what a business network is," David added. ■

NEW FEATURES IN MICROSOFT'S HOST INTEGRATION SERVER 2000

SQL Server interoperability enhancements

- Snapshot, incremental and merge replication from Oracle to Microsoft SQL Server
- Snapshot and incremental replication from DB2 for AS/400 to SQL Server
- Bulk data download of native AS/400 files to SQL Server via Microsoft Data Transformation Services (DTS)

DB2 access enhancements

- Greatly improved performance
- Microsoft Distributed Transaction Coordinator (DTC)-driven support for DB2 for OS/390 and AS/400 via LU6.2
- Improved configuration for DB2 access

Other data interoperability enhancements

- Support for AS/400 data queues via COM automation control
- Fast transfer of native AS/400, AS/36 and VSAM files via COM automation control

COM Transaction Integrator (COMTI) enhancements

- COM+ support
- Dynamic routing to configured host region based on program selection
- Access to IBM's IMS database access via TCP/IP through IBM's Open Transaction Manager Access (OTMA) protocol
- Improved performance tuning, monitoring

Microsoft Message Queuing Services (MSMQ) to IBM's MQSeries bridge enhancements

- Support for MSMQ 2.0 and MQSeries 5.1
- Encryption between MSMQ clients and the bridge
- Configuration wizard for easy install

Host security enhancements

- One-way password synchronization with RACF, ACF/2 and Top Secret
- Better reliability, supportability via host security database based on MSDE

Systems Network Architecture (SNA) gateway enhancements

- Multiple sessions for 3270 clients
- Better Web deployment of 3270, 5250 clients
- Improved scalability of host print server
- Load balancing and hot backup for LU6.2 2PC applications

Administrative enhancements

- Scriptable SNA gateway and MSMQ-MQSeries bridge configure/management based on WMI
- Remote, Microsoft Management Console (MMC)-based, multiserver administration
- Scriptable, modular setup based on Microsoft Installer
- Direct TCP/IP setup option for data access providers at desktop

Source: Microsoft Corp.

Host Integration Server builds on SNA Server 4, Service Pack 3, released September 1999. Document Q236364 in the Microsoft knowledge base lists all the bugs swatted with the latest service pack. The service pack also provided a new OLE/DB Provider and ODBC Driver for DB2, enhanced MSMQ-to-MQ Series bridge, and an updated SDK.

Quick, if you thought the software estimate you just submitted was your best guesstimate, take it back.

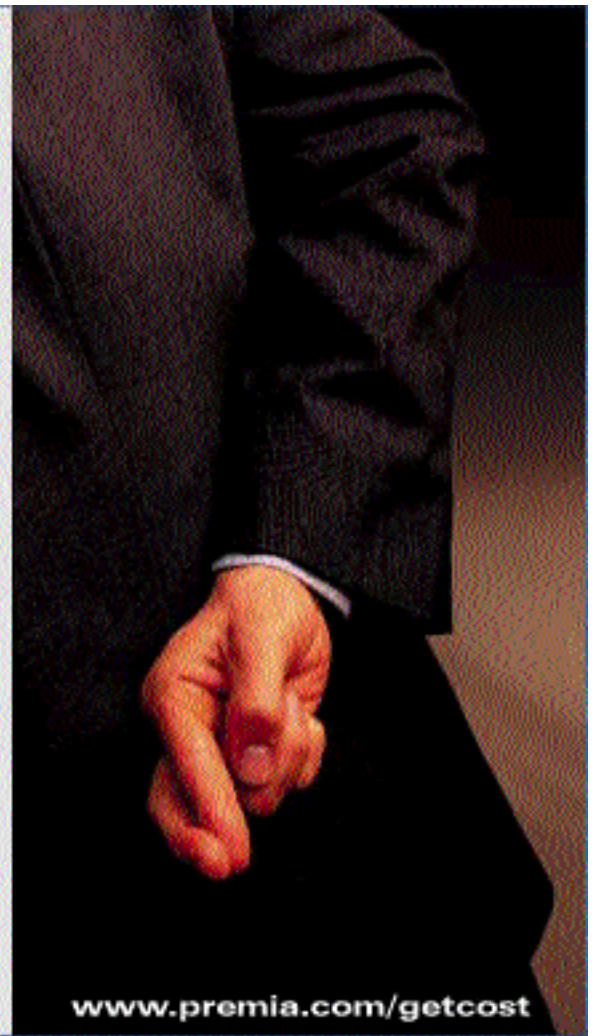
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...and

This means whenever we use the access list
"MyMarty" in the configuration file, we want to
specify the host 133.133.1.2 and the network 133.133.2.0.
The /26 and /32 are the number of bits in the bit mask of
the IP address. The predefined access lists in KIRA 3 are
...idwin, Localhost and Localnets.

...IP addresses pertinent to this

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MICROSOFT PUTS INTERNET EXPLORER IN ITS POCKET

New PDA browser part of larger strategy to make Web more readable

BY EDWARD J. CORREIA

How will your company's Web site look to a PDA browser? As handheld Internet devices continue to grow in popularity, that is a question more and more developers should be asking, and one that Microsoft Corp. hopes to help answer with its strategy surrounding the Internet Explorer for the Pocket PC previewed at CeBIT in February.

"Our goal for the Pocket PC Internet experience was to enable customers to access all the Web sites they want," said Rogers Weed, director of marketing for mobile devices at Microsoft. To that end, the technology will offer client-side features to optimize the browsing experience, according to a company

report. For example, the optional Shrink-to-Fit feature will resize a Web site to enhance viewing on a small screen. The Smart Address Bar will automatically fill in URLs, and Auto-state will divert browsing to cached pages when the device is not connected. The product also will support XML, said the report. "Internet access on the Pocket PC will provide customers with the key functionality they have come to expect browsing on a standard PC," said Weed.

To develop applications and plug-ins for Pocket IE, developers will need to purchase the Windows CE Toolkit with either eMbedded VC++ or eMbedded VB, depending on language preference. The Pocket

PC SDK will be included with the Windows CE Toolkit. Currently, the SDK is in beta and is scheduled for release along with the Internet Explorer for Pocket PC sometime in June; pricing is not yet set.

Microsoft described its Pocket PC strategy as having three main criteria: offline browsing, specialized content and traditional online browsing. Offline browsers will be able to store Internet and intranet pages on the PDA for access while disconnected, a feature that provides an extra measure of security for corporate data and which can be kept up to date through ActiveSync data synchronization, which is inherent to the operating system. Spe-

cialized content is provided through AvantGo.com, which offers a free Internet service with pointers to PDA-optimized Web sites. A subscription service permits a PDA to keep pages in sync with Web sites. Traditional Web browsing will include support for SSL, HTML



Shrink-to-Fit technology will improve viewing experience.

3.2, JScript development software and ActiveX.

In a related story, Insignia Solutions Inc. (www.insignia.com) has released the Jeode Embedded Virtual Machine (EVM), a Java Virtual Machine for Windows CE that enables Internet Explorer 4.0 to run Java applets. The new product was unveiled at the Embedded Systems Conference in Chicago last month and is the first product of its kind, says the company. The Jeode EVM is implemented as a plug-in according to the PersonalJava specification. The company also released the Jeode platform version 1.6, which permits EmbeddedJava technology developers to create, tune and deploy Jeode EVMs to their targets. Licensing and royalty pricing is available by contacting the company. ■

Wind River Plots Future Direction

IN 2001, WILL COMBINE ITS OWN VXWORKS WITH NEWLY ACQUIRED PSOS

BY EDWARD J. CORREIA

CHICAGO — Developers using Wind River Systems Inc.'s pSOS real-time operating system won't be able to for long. Following its recent acquisition of Integrated Systems Inc., Wind River plans to integrate the products and services of the two companies, including the gradual phasing out of ISI's pSOS and pRISM+, its companion integrated development environment (IDE).

According to the plan, outlined at the Embedded Systems Conference last month, Wind River's own RTOS, VxWorks, will evolve through a series of interim releases, picking up new features along the way, some of which were present in pSOS. Wind River also described the formation of a migration team dedicated to assisting ISI customers using pSOS in making the transition using a free migration kit.

The plan was outlined by Curt Schacker, vice president of marketing at Wind River (www.windriver.com). Schacker's migration presentation followed an explanation by company CEO Tom St. Dennis of the new organizational structure that is now in place, including Wind River Consumer, a new business unit. Other units include TDI, short for Transportation, Defense and Industrial; Wind River Services, which will include the Dr. Design consulting firm ac-

quired with ISI; plus Platform Engineering and Networks.

The first interim release, code-named Cirrus, is scheduled for release in mid-2000, and will include Rogue Wave's next-generation Tornado integrated development environment on a number of operating systems, including Linux. With the Cirrus release, VxWorks will incorporate new memory protection technology for application isolation, plus unspecified features for high availability. The company described the technology as a method of partitioning system memory into domains for the kernel and applications; and for shared libraries and data regions.

Later in 2000, the second interim release, code-named Stratus, will include an upgrade of pSOS version 2.5 and pRISM+ version 2.5. According to the report, Status will be compatible with the latest releases of its Diab compiler and SDS debug-ging tool.

At the conference, the company also proclaimed a vision for its Tornado IDE, positioning it as an emerging industry standard, capable of developing for targets of all kinds. The company will continue to offer and support both its Diab and GNU compilers, with Diab as its premium product.

Scheduled for release in 2001 is the converged RTOS, code-named Cumulus, which will be the convergence point for pSOS

customers, and will include the pSOS API and other unique features of pSOS, the company reported.

Wind River's Schacker addressed the growing popularity of Linux as an embedded platform, conceding that Linux "has gotten some traction in specific application segments, notably in embedded standard PC hardware" for applications such as point of sale, industrial PCs and Internet appliances as a replacement for embedded DOS and Windows NT. And while these are not Wind Riv-

er's traditional markets, he said, "they present new opportunities for the company."

Schacker characterized Linux as an unsuitable replacement for VxWorks or pSOS for the embedded market because of the "high fragmentation of the [embedded] platform," due to the specialized hardware architecture and application profiles of each specific device. "The open-source model is not ideal for this market," asserted Schacker, a comment that drew head-shaking from at least one skeptic in the audience.

MontaVista Gets \$9M in Funding

Focuses on building a better Linux RTOS

BY EDWARD J. CORREIA

CHICAGO — Seemingly overnight, there are flocks of vendors hawking embedded Linux... and that means confusion. But thanks to \$9 million of new venture capital from US Venture Partners and Alloy Ventures to work with, MontaVista Software Inc. believes it can differentiate itself from the pack.

Founded in 1999, MontaVista (www.mvista.com) is endeavoring to standardize on a real-time characterization of embedded Linux. "We are one of only a few companies with the competence to do that," boasted Bill Weinberg, MontaVista's director of marketing.

The company's flagship offering is Hard Hat Linux, a distribution of Linux for PowerPC and Intel x86 processors. According to the company, Hard Hat Linux

is a standard, off-the-shelf binary distribution tailored for embedded software applications.

In order to promote Linux as a real-time operating system, MontaVista has created a Linux Real-Time Characterization Project, which plans to distribute performance-measurement data and tools for describing the real-time responsiveness of off-the-shelf Linux systems. The performance benchmark tests will be performed by MontaVista's own engineering staff.

"The first step to using Linux in a real-time embedded application is to know if the Linux kernel running on your hardware can meet your hard response deadlines," said Kevin Morgan, MontaVista's vice president of engineering. "Standard Linux performs very well, even under load, for a range of real-time

tasks. The work that MontaVista is performing will gauge and extend that performance in context for developers, and bring standard Linux into new application domains, including real-time process control, signal processing and many aerospace and defense applications," he said.

MontaVista also plans to enhance the standard Linux kernel for improved determinism and thread scheduling capability; the company claims that it will guarantee submillisecond response times. MontaVista pledges that kernel enhancements and new components it develops will be contributed to the Linux community.

MontaVista's revenue will come from subscription plans for Linux support, and porting and customization services; plus a tool suite and optimizing compilers for C and C++, debuggers and performance-monitoring tools. ■

Alan Zeichick contributed to this story.

ESC CHICAGO

<continued from page 1

ware design teams to automate captured software and system designs and integrate them into a complete process without disturbing an existing development environment. Reported enhancements to the new version include a twofold performance improvement, import capabilities for some Rational Rose model elements, and an enhanced Java code generator.

WINDOWS CE

For Microsoft Corp.'s small form-factor embedded platform, Insignia Solutions Inc. (www.insignia.com) introduced the Jeode platform version 1.6, a product that it claims is the first JVM integrated with Internet Explorer 4.0 for Windows CE. The Jeode Embedded Virtual Machine works as an IE4 plug-in and permits the new browser

to execute PersonalJava applets, said the company. Along with the Jeode platform, Insignia provides a set of optimization and performance measurement tools that enable developers to tune the JVM to best suit specific targets.

Fonix Corp., a developer of speaker-independent, noise-tolerant speech recognition systems, has announced FAAST Embedded, the Fonix Application Accelerator Speech Toolkit, a tool for the rapid development of speech recognition and text-to-speech applications running on the Windows CE platform. Fonix (www.fonix.com) was demonstrating a prerelease version at the show and is scheduled to begin shipping the product this quarter. The company's core technology, which is currently being deployed in embedded applications and products, has small footprint and low power requirements, and has been ported to seven different microprocessors, the company said.

In mid-April, Microsoft will ship DirectX Platform Adaptation Kit (DXPAK) version 1.1, which brings DirectX to the Windows CE platform, opening devices running Windows CE to audio and video streaming content.

DXPAK 1.1 is based on the

DirectX 6.1 API, Windows Media Technologies 4.0 and Windows Media Player 6.4. The tool kit will add on to Windows CE Platform Builder 2.12, the environment for configuring Windows CE for its targets. Developers now will have access to the DirectDraw API, which offers access to display

CE licensing and Platform Builder, giving developers a faster path to market, the company said. The package is available now for \$3,450.

LINUX

Computer I/O Corp. (www.computerio.com) released what it calls the industry's first real-time data streaming server based on Linux. The Easy I/O Server incorporates middleware technology developed by the company and can be configured through a browser. The Easy I/O middleware technology also is available to developers using Windows NT with a browser-based hardware configuration interface, and features a C-callable API and the company's patented Virtual File System for accessing real-time data streams, the company said. Computer I/O also reported an alliance with MontaVista Software

Inc. (www.mvista.com) to use its Hard Hat Linux as an embedded platform for its Easy I/O product line.

Enterprise solutions provider I-Logix Inc. is a new partner with MontaVista Software, and will use Hard Hat Linux for embedded applications developed using I-Logix's Rhapsody application development environment, the company said. I-Logix also reported that it will work with MontaVista's sales, marketing and development teams to integrate the two companies' products, which will be cross-bundled.

The LynxOS and BlueCat Linux operating systems of Lynx Real-Time Systems Inc. (www.lynx.com) will run PacketStream Inc.'s (www.packetstream.com) Synchronous Packet Streaming (SPS) solution, which is currently in beta. The SPS solution provides classification, policing and dynamic bandwidth management of voice, video, data and multimedia traffic over IP networks.

QNX Software Systems Ltd. and Real Networks Inc. will allow OEMs to add RealPlayer 7 to QNX embedded systems. According to a company report, QNX (www.qnx.com) also has integrated RealPlayer in its QNX Nutrino RTOS multimedia suite, which will permit embedded devices to support DVD, MPEG 1 and 2, MP3, CD Audio and 3D gaming. QNX also unveiled its vision of a digital future in which devices are no longer "fixed-function" boxes, but dynamic, extensible devices, capable of being enhanced with new protocols, applications and drivers. QNX released a report outlining a three-part strategy for providing a technology framework to achieve that end, including use of a standard API, compatibility with Linux, and a unique operating system that will permit third parties to add functionality.

HARDWARE

Embedded Planet (www.embeddedplanet.com) is now shipping its Blue Planet, a new development environment based on the Motorola PowerPC PMC8xx family of microprocessors and certified for Windows CE. The Blue Planet development environment includes an

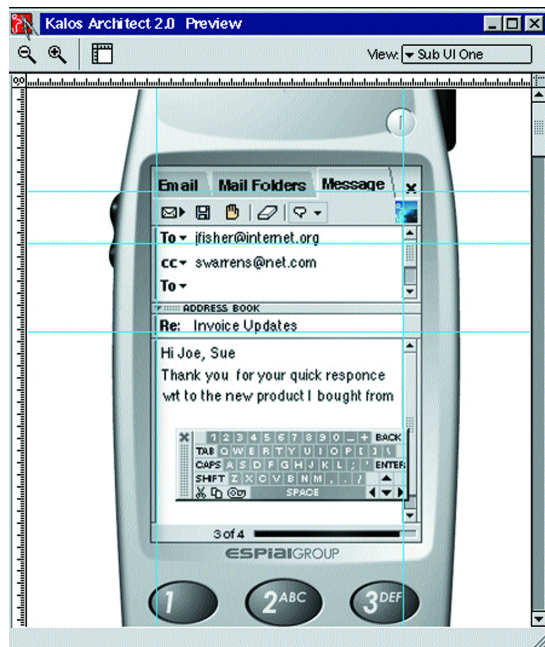
embedded PC-104 form factor board with a PowerPC 823e processor, 640x480 color touch-sensitive LCD, infrared keyboard and trackball, a Windows CE image with desktop, Pocket Internet Explorer, Pocket Inbox, Pocket Word and standard Platform Builder demo applications. Also included are 16MB flash memory, 16MB SDRAM, a 10Mbps Ethernet controller, an RS232 channel, a separate debug channel, a PCMCIA channel and 16-bit sound support.

Mercury Computer Systems Inc. is working with Motorola to develop RapidIO, a new switched-fabric interconnect architecture that will permit embedded chip-to-chip and board-to-board communication speeds starting at 1Gbps and scaling to hundreds of times that, the company reported. Mercury Computer Systems (www.mc.com) supplies scalable digital signal processing systems for embedded computing and has been developing switched fabrics since 1994. With networking players Cisco, Lucent, Nortel and others already on board, the company is seeking additional support to form the RapidIO Trade Association (www.rapidio.org) in the hopes that its new interconnect technology will be adopted as an open standard.

Microchip Technology Inc. introduced the Embedded Prototype Pack, a product design kit that includes a variety of product samples and documentation to aid in the creation of flash-based microcontroller designs. For \$29, developers receive five flash microcontrollers of various memory and package sizes, two different operational amplifiers and two different precision system supervisors. The kit can be purchased from the company's Web site at www.microchip.com. The company also announced two one-time programmable MCU devices with support for USB 1.1 that will work with its PICmicro 8-bit microcontrollers. Samples are scheduled for May and general availability for August. Quantity-1,000 prices will be \$2.84 each for the PIC16C745 and \$3.69 each for the PIC16C765.

Zilog Inc. (www.zilog.com) introduced the eZ80 Internet Engine, an 8-bit microprocessor that the company claims is four times faster than the original Z80 when running at the

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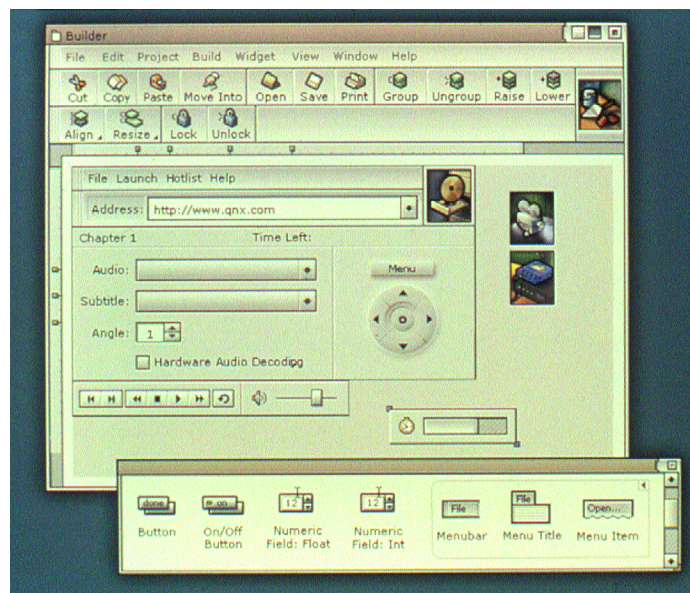


Espsial Architect 2.0 includes target device simulations, permitting quick application previews.

hardware while maintaining compatibility with the Windows GDI; DirectSound and WaveOut Win32 APIs; the DirectShow API, which enables network and local MPEG, AVI, WAV, and MIDI playback; and Windows Media Technologies, which includes Microsoft's Advanced Streaming Format. Compatible targets include Intel x86, MIPS R4300 and compatible, and Hitachi SH-4.

iGS Technologies Inc. (www.igst.com) said Microsoft will support its CyberPro 5000 broadband streaming media chip with the DirectX Platform Adaptation Kit. The development platform will include sample drivers to permit applications to run on CE-based set-top boxes based on the company's chip. According to the company, the CyberPro 5000 is a high-end processor that combines a hardware graphics accelerator with a programmable NTSC/PAL TC encoder, which provides integrated scaling, de-interlacing and time-based correction, plus an audio processor.

BSquare Corp. (www.bsquare.com) unveiled its CE Go program for developers of intelligent computing devices based on Windows CE. The program bundles BSquare's products and services with the Microsoft



The QNX Photon micro-GUI windowing system gives developers a point-and-click environment to create scalable apps.

<continued from page 14

same clock speed, and that rivals the performance of some of today's 16-bit chips. Primarily targeted at Internet appliances and household LANs, the product also is well suited for the modem controller market as well as PDAs and commercial WAN applications, the company reported. The eZ80 can address as much as 16MB RAM, and Zilog's licensing program permits architectural modifications to the chip. ■



Computer I/O's Browser-configurable Easy I/O Streaming Server is based on Linux.

Lineo Partners With emWare, Insignia

Will integrate lightweight networking with Embedix

BY EDWARD J. CORREIA

Embedded Linux supplier Lineo Inc., has partnered with embedded tools manufacturer emWare Inc. and will help further emWare's efforts to bring the Internet to every device.

Lineo sells and markets Embedix Linux, a component-based version of Linux for embedded devices that the company plans to integrate with emWare's (www.emware.com) em-Microgateway, a software interface for connecting lightweight networks to WAN-based ones. "Lineo's technology is a natural fit for set-top boxes and home gateway servers," said Michael D. Nelson, CEO of emWare, based in Salt Lake City. "Lineo and emWare provide highly complementary products," said Brian Sparks, CEO of Lineo. "The combination of Lineo embedded system software with emWare's device network technologies creates a stable base for small network-attached devices."

The emMicrogateway provides a memory-efficient means for giving in-

terconnected home-based appliances access to the Internet, and is part of a larger tool set known as EMIT. Short for Embedded Micro Internet Technology, EMIT is a device networking system and SDK that Internet device developers can use to create connectivity solutions between devices based on 8- and 16-bit microcontrollers over lightweight networking schemes such as RS-485, RF, IR and Powerline.

Lineo also has entered into an agreement to bundle the Jeode development platform from Insignia Solutions along with its Embedix SDK. According to Insignia, Jeode is an accelerated implementation of PersonalJava and EmbeddedJava following Sun Microsystems' specifications for the platform. The product was being demonstrated side-by-side with an unaccelerated implementation at the Embedded Systems Conference in Chicago in March. The results dramatically demonstrated improved performance of the accelerated platform. ■

'Embedded Linux Consortium' Meets to Promote Use of OS

CHICAGO — The Embedded Linux Consortium Formation Committee held its first meeting at the Embedded Systems Conference here with the goal of moving swiftly toward getting the group established. The ELC will be "a proactive consortium to promote the use of Linux in embedded applications...and expects to [be] viable very soon," said temporary executive director Murry Shohat. Rick Lehrbaum will be the acting chairman. Lehrbaum is a journalist and former executive vice president of strategic development at Ampro Computers Inc., a manufacturer of embedded computer modules, software and accessories, and founder of the Web portal LinuxDevices.com.

According to documents released prior to the meeting, the organization's mission will be twofold. First, the group wants to "create a market perception that instead of there being two main options for embedded operating systems (Microsoft and non-Microsoft), there

will be three: Microsoft, Linux and 'other.'" The second part of its mission will be to make Linux the first choice for designing embedded systems.

The documents also proposed a number of guidelines for admission to the noncommercial consortium, including dues and an estimated budget and membership. Shohat indicated that a surprisingly large group met and committed resources to the project.

Of the 75 attendees at the meeting, a total of 16 organizations agreed to immediately join the Formation Committee and pledge the \$5,000 start-up fee, including: Accelent, Cendio, Centura, Coollogic, Infomatec, Lineo, LinuxDevices.com, Lynx, MontaVista, Motorola, NewMonics, QNX, Red Hat, TimeSys, Transvirtual and TrollTech. There may be as many as four additional companies admitted to the committee that were present at the meeting. The deadline for charter membership in the ELC, once formed, is April 1. ■

HELP DEVELOPMENT SUPPLEMENT

You Can Raise Your Application's Usability Without Writing Any Code

Do you want to raise the usability of your applications without having to write any code? A high-quality, full-featured Help system is the answer.

It's been said that an application can never be better than its Help system. But for some development teams, the user assistance that accompanies their application is an afterthought. They assume that their code can stand on its own and that the application's interface is so easy to use that additional Help and assistance for their users isn't really necessary.

"RoboHELP will end up saving at least 6 months of manhours over the planned 18-month lifecycle of our project."

However, this is definitely not the case! Studies show that 80% of end users use the Help system and printed documentation when learning a new application, making the Help and documentation critical to overall usability.

If you want to improve the quality of your Help and documentation, then you'll want to take a look at RoboHELP. It writes all of the Help file code for you. Despite all of the changes in Help formats in recent years, RoboHELP Office remains the industry standard in Help authoring.

"We chose RoboHELP Office for its superior reputation and industry standard Help authoring capabilities. RoboHELP will end up saving at least 6 months of manhours over the planned 18-month lifecycle of our project. Our senior level management personnel have been more than impressed with what's been delivered and they're very excited about the possibilities of our finished product," said Steve Winnicki of American Pad & Paper Company.

RoboHELP's powerful functionality makes creating a full-featured Help system fast and easy. In fact, it's used by developers at companies like Symantec, Intuit, Adobe Systems, Hewlett Packard, General Motors, Johnson & Johnson, American Express and many more organizations of all sizes.

RoboHELP is a first rate tool for authoring all Help formats, including Microsoft HTML Help and WinHelp, Sun's JavaHelp, and Blue Sky's WebHelp. It even generates printed documentation directly from your Help project for manuals, tutorials and training guides. Check out RoboHELP Office 2000 for yourself. The latest version is packed with tons of new features.

B RoboHELP Office 2000, Blue Sky Software, La Jolla, California, 92037 800-796-8459, www.blue-sky.com

Free HTML Help Starter Kit

If you want to start creating HTML Help systems now, then take advantage of a unique offer from Blue Sky Software.

They're giving away a free HTML Help Authoring Starter Kit to developers, technical writers, documentation specialists and anyone else who wants to learn how to create HTML Help.

Valued at \$499, the starter kit contains a free 15-day license of RoboHELP 2000 for Microsoft HTML Help, an industry report on Help authoring and a sample WebHelp file.



It's free. You can get a copy of the HTML Help starter kit two ways. Download it at www.blue-sky.com/kit or you can call Blue Sky Software at 800-796-8459.

FREE HTML Help Starter Kit

Speed Up Help Development by 50% Safelite Reveals How with RoboHELP

Safelite AutoGlass Corporation, America's largest supplier of auto glass replacement and repair services, chose RoboHELP to create their HTML Help.

"In half the time it took to develop a Help file with Microsoft's HTML Help Workshop, RoboHELP enabled us to convert the file, spruce it up with extensions, and make it more visually appealing," said Gerald Mindek, product development analyst at Safelite.

"RoboHELP enables our designers to learn and begin Help creation more quickly than with any other products we have seen."

The first reason Safelite chose RoboHELP was because of its capabilities. "RoboHELP has such great flexibility when it comes to creating and designing Help files. RoboHELP's single source feature and HTML Help generation enabled us to be less concerned about what format a Help file should be in," he added.

"If we need to create HTML Help or printed documentation, but the current Help is in WinHelp, this is not a problem thanks to RoboHELP's single source features. Secondly, the interface provided by RoboHELP to create and design Help files is impeccable. RoboHELP enables our designers to learn and begin Help creation more quickly than with any other products we have seen. The availability of commands with keystrokes and in menus is great, the organization is intuitive, and RoboHELP's own Help file is very informative," Mindek said.

EDITORIALS

Shoplifters in Your E-Store

In the March 15 issue, we first reported about security breaches in Web-based e-commerce ("Shopping Cart Security Holes Leak Real Dollars," page 12). In February and March, the mainstream press reported on hacker attacks against many well-known dot-com storefronts.

Those attacks and security breaches weren't the first, and they won't be the last. Who's to blame? Hackers and electronic shoplifters, yes. But our own impatience plays into their sticky fingers. Impatience to launch our commerce site. Impatience to get the drop on the competition—or just to begin catching up. Impatience to begin trading with a new set of partners using a vertical portal.

The truth is, any nontrivial Web-enabled application is complex. What happens when you have multiple Web servers communicating with several application servers talking to a large number of interlinked databases? When the three-tiered architecture becomes a mesh, the number of combinations makes the creation of security policies complex, and the testing of those policies even more so.

Then add a new wrinkle: Some of those Web, application or database servers don't belong to you. They belong to your partners or to your suppliers. Now, how are you going to guarantee to your CEO that yes, the transactions are secure? Especially when so much data is transmitted in plain English, such as within many HTML or XML messages, without integrity checks. Or even a clear idea as to which application(s) are responsible for validating and authenticating the XML messages.

That's not to say that you should give up. On the contrary. It's nearly impossible to retrofit effective security on a nontrivial *n*-tiered project. The only way to make sure you're not giving away the store to some sticky-fingered hacker is to be less impatient. Design the security policies early, and test them at every stage of the plan. Should you be paranoid? Yes. Of course.

It's better than being impatient.

Piracy. Who Cares?

For years and years now, we've all been seeing the occasional news report about software piracy. Big duplicating ring busted in Hong Kong. Medium-sized business pays fines. Millions of dollars are lost, the reports always say, along with good old American jobs.

Some ISVs don't mind—they look at pirated software as a marketing tool. Sure, use the software for free...for now. But if you want support, you'll have to register and pay. (That brings up the whole issue of software developers now being incented to create products which *require* support. But that's another story.)

Other vendors take a less sanguine view of piracy, particularly when the software is expensive, runs on a desktop PC rather than a server, and it has only a limited market to begin with.

According to our page 1 story, the latest reports say that U.S. piracy cost the economy 109,000 jobs in 1998. Frankly, it's hard to believe that figure. Many of the pirated copies would never have been purchased in the first place, and software companies often figure piracy into their sales projections.

But that doesn't make it right. And that's one reason why we'll keep running these stories. ■

GUEST VIEW

COMPETITIVE ADVANTAGE IN THE NEW ECONOMY

The Internet not only has altered the way we shop and learn, it has dramatically influenced how we conduct and deploy a successful business. Businesses of all sizes—from a small retail venture to a worldwide financial enterprise—face new IT pressures as they race to incorporate sophisticated Internet-enabled transaction-oriented applications that are designed, developed and implemented in warp speed.



**RICHARD
DOERR**

New tools are needed to allow IT departments to build and deploy applications that run on all available platforms—from Unix, Linux and Windows NT servers to legacy mainframe systems, which still run 70 percent of today's mission-critical applications. The stakes are high. Recent high-profile e-commerce "crashes"—the nightmare of any e-business venture—have been ultimately attributed to software application problems.

Problems do not stop there—text and graphics in a Web site are changing even more frequently and also need to proceed through an ordered approval process. The challenge faced by enterprises competing in the digital economy is to manage the volume of change and enormous complexity, while moving faster, smarter and more cost effectively.

Centralized control over

changes to complex enterprise systems is mandatory to ensure uptime and availability, manage costs, and speed time-to-market with new initiatives. Automated, end-to-end Software Change Management (SCM) offers significant and measurable value, yet is too often overlooked in the rush to keep pace with dynamic business models that continue to test the capabilities of even the best-designed IT systems.

A recent Yankee Group Report, "Empowering E-Business Development Through Effective Software Change Management," outlined the many benefits that a comprehensive SCM solution brings to the e-commerce IT environment. The report presented the results of a series of customer surveys geared to determine the impact of SCM products in key areas of application programming support, directly related to developing and maintaining typical e-business applications. For SCM users, the improvements were dramatic: increased uptime and reliability, 28 percent; reduced time-to-market for new applications, 23 percent; reduced programming hard costs, 19 percent; and reduced development time, 16 percent.

These dramatic benefits are delivered by automating manual, error-prone activities; tracking component and content changes

and their interrelationships to ensure application integrity; enforcing consistent processes for change with the necessary flexibility to address varied business needs; and enabling large teams of contributors and developers to work in parallel without compromising speed or quality.

The Yankee Report (www.serena.com/pdf/CMN-YankeeGroup.pdf) clearly identified the benefit of implementing a single point of control for managing change across all major platforms from the mainframe to the Web, while coordinating software and content changes. This is important in business today, because as large enterprises continue to "Webify" their mission-critical legacy applications, they will have to do so across a multi-tier architecture with components running on the mainframe, with Unix, Linux and Windows NT servers and Web clients.

To capitalize on new opportunities in the Internet economy, change is necessary for business success—chaos is not. Solutions that offer control of not only the demanding application development process, but also real-time Web development, provide a company with a measurable competitive edge, as they increase quality and reliability and improve time-to-market. ■

Richard Doerr is president and CEO of Serena Software Inc. Reach him at rdoerr@serena.com.

FROM THE EXECUTIVE EDITOR

A CASE OF HYPE-NOSIS

And now a word from BZ Media, the worldwide provider of *SD Times*®, the premier, best-of-breed, industry-leading, soon-to-be-award-winning newspaper of record for the software development industry.

I mention those things, tongue-in-cheek, to differentiate our newspaper from those other periodicals that are dotting the dot-com landscape. But I know that once readers become familiar with our paper and get into the habit of reading us twice each month, they will see why we are different, *without* our having to make boisterous claims.

I also know that with high-tech companies springing up about as quickly as a cake freak

at a Viennese table, they feel compelled to do something, utter some pithy slogan, in their announcements to set themselves apart in a very crowded field of players.

We have seen in recent months a spate of product announcements, partnership deals and venture fundings that you would think, by their tone, are heralding in the next great era of technological wonder. Neil Armstrong's walk on the moon didn't get the volume of hype that precedes a version 6 rollout.

Here are just a few of the many releases that have come through our offices in the past few weeks:

"Recognition Systems...a worldwide leader in the development of customer experience management..."

First of all, I didn't recognize the company. And, what is the development of customer experience management?

"Sage Software, the leading provider of PC-based accounting solutions in the U.S...."

Do their accountants have any way of validating that boast? What about server-

based accounting solutions...will some other company stake a claim to that title?

This one's a beauty:

"Push, the industry's first Total Service Provider (TSP) and the California Central Coast's only Platinum Citrix Integrator..."

I guess other companies al-

► continued on page 17



**DAVID
RUBINSTEIN**

THE BIG-PICTURE VIEW OF E-COMMERCE

E-commerce means shopping carts. E-commerce means extranets linking trading partners. E-commerce means procurement over the Internet. E-commerce means open-standards-based EDI. E-commerce means the disintermediation of traditional distribution channels, but then reintermediation with new distributors and resellers. E-commerce means improved interaction between original manufacturer and final customer.

E-commerce means anything and everything—and makes it difficult for software development managers struggling with carrying out a CEO directive, “Find an e-commerce solution.” Before you can do that, it’s helpful to understand the full spectrum of what e-commerce means, and what it can mean for your business.

In “Exploring E-commerce, Global E-business, and E-societies,” Craig Fellenstein and Ron Wood take the big picture view of the world of electronic commerce.

In a dry and humorless presentation style more suitable for a PriceWaterhouseCoopers or McKinsey executive report than a trade paperback, the authors embark on a higher-level voyage, first defining the different types of e-commerce, discussing how e-commerce can help improve a business’s bottom line, and finally how e-commerce can (or will) restructure

businesses, society and even government. Mixed in with their charts and graphs are solid suggestions, of the sort that only senior consultants could make with authority.

But then, Fellenstein and Wood are senior consultants, of a sort. Fellenstein is global chief deployment architect at IBM’s Global Services division. Wood is an IBM executive consultant involved in the company’s own e-commerce strategies.

Despite the fact that both authors work for Big Blue, their book is nicely evenhanded.

The first quarter of the book explores the question “What is e-commerce?” The chapters wander disjointedly, discussing definitions of both e-commerce and e-business proposed by different organizations. It’s interesting to see the various and sometimes conflicting definitions—and it’s helpful to realize that there is such disparity.

Anyone searching for hard data might be tempted to jump over these first few chapters. Don’t skip pages 30 to 34: “E-business Design Quality Aspects.” Here, the authors define 10 “best practices” for designing a quality e-commerce system, which they refer to repeatedly throughout the rest of the book. Without knowing that “design quality” means *correctness, efficiency, flexibility, in-*

tegrity, interoperability, maintainability, portability, reliability, reusability and testability, the constant references to that concept become meaningless.

A small, 30-page section on distribution channels makes up the second portion of “Exploring E-commerce.” Don’t skip it. It’s focused on how e-commerce activities will affect banking, the channel and the role of new content aggregators. Since nearly every business uses a bank, or is a bank itself, the author’s observations on how the financial infrastructure is changing and how new players are emerging to perform activities formerly reserved for banks, are vitally important for planning an e-commerce system.

Nearly half the book is consumed by the third section, which focuses on how to re-engineer a business to exploit e-commerce—or at least, to survive it.

An exploration of how e-commerce can affect spare-parts manufacturers, in conjunction with a mini-case study of Boeing Co.’s spares business, defends the assertion that this business sector not only will make a rapid move toward e-commerce, but in the process it will eliminate its resellers. The authors’ arguments, of course, may lend themselves to portions of other businesses.

But if you’re going to disintermediate your channel partners and deal with your customers directly, the authors caution, be sure to learn *how* to deal with end customers. Many Web sites are hard to use, and without metrics it’s difficult to know where the problems lie. Remember that on the Web, as the book repeats often, your competitors are only a click away. The book stresses good design principles, and includes a list of 20 tests for evaluating site usability. Good stuff.

Finally, “Exploring E-commerce” takes on what the authors term “unique management and organizational challenges” using the insurance and travel vertical markets as examples. Even if you’re not in one of those markets, there

may be common factors that apply to your business.

Overall, “Exploring E-commerce” offers an unusual viewpoint, of how IBM (by implication) views the world of e-commerce. Considering that IBM has been one of the most successful vendors in this area, it’s worth a few dollars to spend some virtual time with two of its experts. ■

“Exploring E-commerce, Global E-business, and E-societies.” Craig Fellenstein and Ron Wood. Prentice Hall, 2000. Trade paper, 269 pages, \$39.95.



◀continued from page 16

ready had marked out “leading application service provider,” or “best Internet service provider,” so Push had to go out and invent a title all its own: “total service provider.” And then, they give you the acronym to try to make you think it’s a commonly used term. And I’m left to wonder, who is the California Northern Coast’s Platinum Citrix Integrator, or the one from the state’s Southern Coast?

And then there is this one from a recent press release: “Rational Software, the e-development company, announces the availability of two new books authored by Rational thought leaders.”

Thought leaders? Weren’t they the guys from *Fahrenheit 451* who decided what people could and could not read, or lis-

ten to? That one just flat-out scares me.

Every company, it seems, touts products that are “best-of-breed.” What is this, the Westminster Dog Show? And the ones that really get me are the announcements from start-ups. I wonder, how can a company that’s 14 months old, doesn’t have a product out yet, and isn’t likely to turn a profit in the next five years (if ever) call itself an industry leader in anything? It’s like Lake Wobegon, where every child is above average.

All this noise. After a while, you become deaf to it. A person who lives next to a firehouse, after a time, stops hearing the sirens; yet, every visitor to that home wonders how anyone could stand living next to a firehouse.

So, with the full understand-

ing I could be labeled a heretic for this, let me put forward a supposition to all you vendors in the audience: How about positioning your company and its products with a little honesty and openness?

For an industry that looks to openness of source code as a panacea, it sure is difficult to reach many of these company executives, who take a willing back seat to the PR and marketing machinery. How is it that someone can conceive of a world in which all people are linked electronically for information and transactions, but cannot answer a question without a public relations person listening in on an extension, running interference, making sure the response places the company in the best possible light.

Don’t misunderstand. Public relations professionals are im-

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Send your thoughts to letters@bzmedia.com, or fax to 516-922-1822. Please mark all correspondence as Letters to the Editor.

New BEA Products, Alliances

BUSY MIDDLEWARE VENDOR ALSO HAS RECORD REVENUE, INCOME

BY ALAN ZEICHICK

Some bees sure are busy: At its annual users conference in San Francisco, middleware vendor BEA Systems Inc. demonstrated several new and upgraded products, unveiled business alliances and disclosed record quarterly financial results.

Upgrades to BEA's WebLogic Commerce Server and Tuxedo transaction processing engine were the centerpiece of the company's presentation.

BEA (www.bea.com) claims that its upgraded WebLogic Commerce Server 2.0 is the first commerce server to use Sun Microsystems Inc.'s Enterprise JavaBeans (EJB) architecture, and is completely compliant with Sun's Java 2 Enterprise Edition (J2EE). Features of the WebLogic Commerce Server include online catalog, shopping cart, inventory management, order entry, order management, customer service, shipping and rules-driven product recommendation.

The new software is expected to be available this month for Windows NT and Solaris. It's priced at \$40,000 per CPU, and includes BEA's WebLogic Server application server.

RULES RULE

WebLogic Commerce Server's rules-driven product-recommendation feature uses technology from ILOG Inc. (www.ilog.com), long a player in the artificial-intelligence and expert-systems market. BEA has licensed ILOG's JRules Java-based engine and will incorporate it into the commerce server. JRules can be integrated with a Java client in the form of an applet, or with a server as a servlet, EJB component, CORBA component or COM+ component.

"WebLogic Commerce Server provides the market with the most adaptable, standards-based implementation of commerce functions," said Ivan Koon, president of BEA's e-commerce application components division. "We differentiate ourselves by enabling our customers to create sustainable competitive advantage through the customer-driven business-to-business value chain. ILOG's compact, high-performance rules engine enables us to deliver the cus-

tomers retention component for more effective up-sell and cross-sell opportunities."

DRESSING UP TUXEDO

At the conference, BEA announced the version 7.1 upgrade to its Tuxedo transaction-processing middleware engine, with key enhancements claimed in the areas of security software integration, improved message-queuing performance, threads-based programming support and support for XML. Tuxedo 7.1 is scheduled to be available in the second quarter.

Tuxedo 7.1's new Security Framework, says the company, allows developers to integrate Tuxedo applications with third-party security products, as an alternative to using BEA's own security tools. Tuxedo also now includes support for Public Key Infrastructure (PKI) encryption.

The benefit, claims BEA, is that Tuxedo-based applications can more efficiently perform multiple transaction sequences in parallel, such as checking a consumer's credit and updating the supplier's inventory database.

Also, as part of BEA's move to Web-enable business-to-busi-

ness transactions, Tuxedo now recognizes XML data types within a Tuxedo message buffer, and can route the message based on the content of the XML data.

GOOD FOR BUSINESS

Two big companies are working more closely, as BEA and NCR Corp. unveiled a multimillion dollar licensing and joint marketing agreement to help the companies jointly market both BEA's transactions servers and NCR's Teradata data warehouse.

Under terms of the agreement, both companies will jointly market a BEA eLink adapter for Teradata, which allows applications running on the WebLogic application server to access the data warehouse. NCR will resell the BEA's WebLogic Server, and BEA will resell Teradata for Windows NT.

"As e-businesses evolve beyond simply using technology for collecting transactions and delivering information, they require technologies that enhance relationships," said Marty Seyer, vice president of NCR's E-Business Group.

Perhaps BEA will need a data warehouse for its order book: The company announced a record fourth quarter. For the quarter ending Jan. 31, BEA reported revenue of \$149.2 mil-

► continued on page 19

Dartmouth Force-Feeds Java To Students Thirsting for Knowledge

All-nighters now require both caffeine and caffeinated programming language

BY DAVID RUBINSTEIN

This is the stuff that college bookstores live for.

Dartmouth College, that bastion of the Ivy League, has decided to scratch C++ from several mandatory computer science and engineering classes, replacing it with Java.

The switch, according to the college, will allow course work to be done on PCs, which was not allowed in the past, and will make the courses more accessible to the increasing number of PC users on the campus. The courses are taken by roughly 280 students every year.

C++ had been taught at the Hanover, N.H.-based school since 1994, but the move to Java was made, according to associate professor of computer science Tom Cormen, because it's easier to learn and "is quickly becoming the programming language of the Internet." Dartmouth, of course, has a history of innovation in programming languages—it was at that school, in 1964, that John Kemeny and Tom Kurtz developed the BASIC programming language for their computer programming courses. Later, Dartmouth made the move from BASIC to Pascal.

Computer-science majors still must learn C++, which is used in most upper-level courses and is the standard in the programming industry, Cormen said. In the Java classes, students will learn to use objects right away, a topic that was delayed in C++ classes, he added.

The move from C++ to Java reflects a recent trend at other colleges reflecting an improvement in programming software and...textbooks. ■

News Briefs

PRODUCTS

◀continued from page 7 iRenaissance has added XML API functionality to **iRenaissance Events**, its event management package formerly known as Calendar Central. It claims the addition of an XML API will enhance users' ability to interface with legacy systems anywhere within an organization without the need to recode legacy apps . . . Fujitsu Software announced AIX compatibility for its **i-Flow** embeddable workflow engine, available to ISVs, systems integrators and OEMs . . . MuSE Technologies Inc. has upgraded its **MuSE Software Development Environment to version 2000**, which is focused on helping developers understand complex data using perceptual computing . . . Imperial Software Technology Ltd. has updated **Visaj**, its visual application builder for Java, to integrate with Sun Microsystems Inc.'s Forte for Java Community Edition integrated development environment (formerly known as NetBeans) . . . Neon Systems Inc.'s new **Diplomat** product, when integrated with Neon's **Shadow** product group, provides a blending of enterprise application integration and B-to-B integration for disparate S/390, Windows NT and Unix applications . . . TRADEPAQ Corp., (formerly EDI Corp.)'s new **TRADEPAQ.enable** puts existing enterprise applications running on host systems onto the Web without additional programming by converting host screens into a Java-based GUI . . . Aufrance Associates has updated its Internet ASP development tool kit. The **VB ToolKit Internet 2000 for Windows NT and Visual Basic 5.0** includes sample source code and 15 Visual Basic classes that provide source code for developers to create Web-to-database and automated e-mail applications . . . Sun Microsystems Inc.'s new **Sun Development Framework** program is designed to bring together a select community of ISVs with similar design goals so they can create cross-platform solutions with integration, interoperability and compatibility for Web applications, J2EE applications, mobile wireless or e-commerce solutions . . . GraphOn Corp. will release OEM beta versions of its Web-enabling software **Bridges for Unix and Linux**, providing fast access of Unix and Linux apps from a desktop device over any connection with no additional hardware and without changing code. The release of Bridges 1.0 will replace GraphOn's current server-based software product line, including **GO-Global**, **GO-Joe** and **GO-Between**.

PEOPLE

Microsoft Corp. announced that **Edward Tobin**, currently U S West vice president for public policy and former top aide to Massachusetts Gov. William Weld, will join the company as senior director for corporate affairs . . . BEA Systems Inc.'s CFO **Steve Brown**, has been promoted to the newly created position of executive vice president of business planning and development. The company also announced that **William Klein**, former vice president and chief financial officer for Hewlett-Packard Co.'s Inkjet Imaging Solutions business, has been appointed chief financial officer. Both Brown and Klein will report to chairman and CEO **Bill Coleman** . . . In a recent survey of 1,400 corporate chief information officers, 37 percent of corporate CIOs named Microsoft Corp. chairman **Bill Gates** as most admired in the industry. Dell Computer Corp. chairman and CEO **Michael Dell** was next with 19 percent, followed by Apple Computer Inc. CEO **Steve Jobs** (9 percent), Linux inventor **Linus Torvalds** (7 percent), Hewlett-Packard Co. co-founder **William Hewlett** (5 percent), Sun Microsystems Inc. chairman and CEO **Scott McNealy** (3 percent) and Oracle Corp. chairman and CEO **Larry Ellison** (3 percent). And, 17 percent of the respondents chose "Other/Don't Know" . . . **Greg Heard** has joined Sequoia Software Corp. as CFO; he previously served as managing director at Corbyn Investment . . . Symantec Corp. has named **Ron Moritz** as chief technical officer. Moritz will lead Symantec's Core Technology group . . . Ariba Inc. appointed **John McMahon** as senior vice president of worldwide operations . . . BZ Media's *SD Times* has named **Mara Leonardi** as art director, **Phyllis Oakes** as circulation assistant and **Doug Finlay** as associate news editor. ■

Rogue Wave Steps Up Offerings

Objective Studio for Windows 2000 highlights tool upgrades

Upgrades of three of its best-selling packages are at the core of a product-improvement initiative at Rogue Wave Software Inc.

The company's Stingray division is shipping Objective Studio for Windows 2000, designed to provide programmers with components helpful for building applications in Microsoft's Visual Studio environment.

Among the new features of Objective Studio are improved support for HTML, Extensible Markup Language (XML) and Microsoft's BizTalk protocol, as well as improved compatibility with Windows DNA 2000. According to the company, Objective Studio 2000 offers a tool to generate source code from an XML schema and the ability to save grid blocks as HTML tables. Also, customers will be able to select individual products in a custom suite, rather than having the studios prepackaged. There are 11 products from which to choose, including seven Visual C++ products, and they can be seen at the company's Web site (www.roguewave.com).

Stingray has also slashed the price of Objective Studio by nearly 50 percent over the previous versions, with volume price discounts for multiple-license purchases and a discount for purchasing through the Rogue Wave site.

In addition, Rogue Wave has upgraded its Threads.h++ and DBTools.h++ component libraries. Version 2.0 of Threads.h++ adds features to reduce time developers spend debugging multithreaded applications and to reduce memory leaks. Applications built with Threads.h++ are portable across supported platforms, including Windows NT, Solaris and Linux, says the company.

DBTools.h++ 4.0 offers a two-level programming interface that enables developers to choose the mix of productivity and control when developing applications. Using the

DBTools.h++ "classic" interface, developers are shielded from the details of relational database programming. The new OpenSQL interface provides low-level control of the code

specific to a particular database. In addition, DBTools.h++ 4.0 offers a performance boost to current users with no changes to existing applications, and runs on Windows NT, Solaris, Linux, OS/400 and OS/390.

Speaking of Linux, Rogue Wave has also ported its Nouveau 2.0 component library to

Linux. Nouveau uses XML and Simple Object Access Protocol (SOAP) to provide interoperability among COM, CORBA, RPC, XML and Java—across your enterprise or over the Internet—without bridges or wrappers, says the company. Nouveau for Linux pricing starts at \$3,600 plus run-time licenses. ■

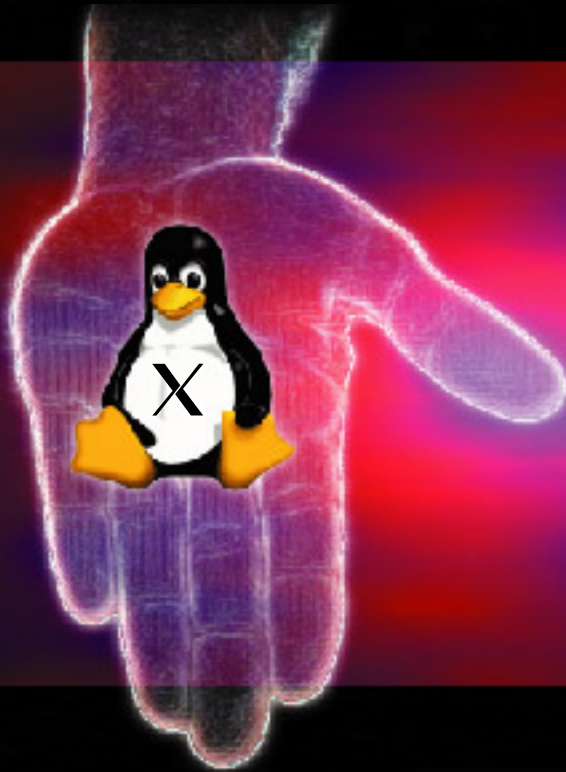
BEA UPDATES

◀continued from page 18

lion, up 82 percent from the same period in the prior year, and up 18 percent over the third quarter of this fiscal year. BEA's operating income for the fourth quarter was \$22.3 million, up 273 percent from the prior year's fourth quarter and up 55 percent over the third quarter of this fiscal year. The company's board of directors authorized a two-for-one stock split. ■

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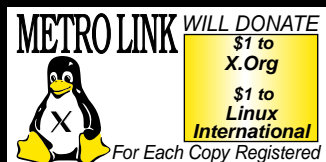
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BATTENING DOWN THE FORT, TIER BY TIER

Web-based businesses are forcing application developers to redefine what it means to build secure systems

BY JENNIFER DEJONG

Recent attacks on popular e-commerce sites are raising questions about the security of Internet applications. In the past few months alone, hackers have proved that they can steal customers' credit-card numbers, rip off e-tailers by swapping price tags en route to the electronic checkout, and even temporarily close an online store's doors for business by launching denial of service attacks.

That has catapulted the issue of Web security from the back burner to the bottom line, getting application developers to talk about what went wrong.

"In the rush to get commerce sites up, they are playing fast and loose and getting burned for it," said Scott Dietzen, chief technology officer at BEA Systems Inc. (www.bea.com), a Web software developer whose application and transaction servers power sites such as Amazon.com, Priceline.com and

eTrade. "Pressure to get a site up is just intense," he added.

Dietzen and others like him agree that the breaches are largely the result of poor programming practices. As companies succumb to market pressures to get their e-commerce sites up fast, they are rushing their development efforts, unknowingly allowing programmers, who may lack enough experience, to design Web apps that leave holes wide open for hackers.

Compounding the problem, they say, is that the Internet is in the midst of rewriting the rules of developing applications, hurtling enterprise development shops into a major technological and cultural change. As they move away from a client/server model of computing and toward a Web-centric one, they are finding few security road maps to follow, leaving many to learn by trial and error.

"We have gone through a lot to get

here," said Steve Graese, director of software development for the travel reservation Web site Trip.com (www.trip.com), who began developing the site about three years ago. "Even when you do your homework, there's a lot to learn along the way."

SECURING THE FORT, TIER BY TIER

Before the Web, there wasn't much reason to worry about outside threats to applications. "But when you talk about securing your Internet applications, you are talking about adding multiple layers of defense," said Carol Woodbury, chief engineering manager for AS/400 security at IBM Corp.

Because they are complex and multitiered, unless they are carefully secured, e-commerce applications leave potential holes for hackers. In a typical setup, a browser talks to a Web server, which talks to an application server, which in turn talks to multiple back-end databases that store the inventory and accounting data essential to completing the online transaction. "Each [tier of the application] comes with its own level of risk—and each layer must be secured," said Woodbury.

"You need to repeat the authorization process on each tier of the system,"

added Dietzen, who said that the typical BEA Systems customer is managing a Web application that is at least three tiers deep. "At each point, the client has to establish that he is who he says he is. It's easy to forget that step [when it comes to the back-end databases]," he said.

Although it's natural to apply the highest level of scrutiny to applications that reside outside the firewall, in multitier Web applications it's also essential to secure internal communications to the same level. That's common practice in the financial industry, said Dietzen, where federal regulations stipulate what kinds of information employees can and cannot see. "You can use the same securities on the intranet as you do on the public Web," he said.

Part of reason it's so easy to forget about securing inside systems is cultural. At many companies, the back-end databases that are now being integrated with Web applications have been around for years—and for years there simply wasn't much reason to secure them, according to Linda Distel, program director for System/390 security at IBM. "But now that they play a critical role in completing Web transactions, all that has changed."

► continued on page 23



Security wasn't an issue before the Web, said IBM's Linda Distel.

BUILDING SECURE APPS IS ABOUT PEOPLE, POLICIES AND PROCESS

Larry Baron is senior product manager for Java security at Sun Microsystems Inc., where he's responsible for the security features embedded in the Java Development Kit, as well as numerous separate security products and extensions. Given the host of tools and technologies programmers have at their disposal today, Baron believes that developing secure applications is ultimately not about what tools you use. It's about people, policies and process. He said the only way to ensure that people develop secure systems, considering the enormous complexity of today's multitier Web applications, is proper adherence to an appropriate policy. We asked him to elaborate on that and to comment on some of the recent security breaches that have made headlines. Here's what he had to say.

SD Times: What do you make of recent reports of customers being able to "price-tag swap" in their e-commerce shopping baskets, changing the scripts around to lower the price?

Larry Baron: What you are talking about here is an instance of poor implementation. That happens because there's no security policy at the outset—no set of rules or a means of enforcing them.

What does the security policy entail?

In building a security system, you have to keep three things in mind: people, policies and process. You have to decide: "What am I going to allow? What am I going to prevent people from doing?" Let's say we have a security policy

that says: "I don't want people to do administration on weekends or during nonbusiness hours." If that's your policy, you need a process to match. One is useless without the other.

How would you apply that to a shopping cart example?

What is happening in the shopping cart application is that the software is configured with hidden fields, which users are getting access to and changing. In this case, your policy is not to embed scripts in price tags. You need a process to match. That might be using an anti-tampering technology, such as signed check sums, which adds a unique identifier that is checked at each stage.

Why are we seeing such poorly implemented Web applications?

There is nothing endemic to e-commerce that makes this happen. You can design bad client/server apps, too. What is happening is that there is a lower barrier to entry in Web-based apps. There are a lot of home-grown Web sites out there, designed by people who have the knowledge to get the shopping cart to work but don't have the experience to do it right. Designing multitier applications demands a high degree of know-how, a combination of knowledge and experience.

So applications like the "price-swap" are being designed by people with barely enough knowledge and no experience? Exactly. In multitier applications, you are building systems that have a lot of handoffs—a browser talks to a Web server, talks to an app server, which talks to multiple database back ends.

They are extraordinarily complex. You have to understand the chain of custody for the data. What is happening to the data? Is there any chance it can be changed or altered along the way? This is really a matter of trust—do I trust that the data I got is really the right data? You have to [secure that data] every step along the way.

With many applications, users and administrators use the same Web-based interfaces. How can enterprise developers ensure that the administrative interfaces are safe?

It's suicidal to build a system where users and administrators share the same interface. You need a strong I and A chain—that's identification and authentication. How do I know you are who you say you are? The lowest form is, of course, passwords, but there are other technologies, like the digital token card, or "hard token," which is especially useful for verifying the identity of administrators logging on remotely. These tokens generate single-use passwords without requiring synchronization with a host.

What other approaches can you use?

The administrative tasks can be broken down into roles. One admin adds new products to an e-store. The next guy adds the price information. It's a basic security concept—separation of roles—which prevents a situation where the sole administrator can do bad things.

Let's get back to multitiered applica-

tions. A system with multiple handoffs, as you call it, is only as secure as its weakest link. How do you test it?

It's not a question of building and testing them. You need a policy first. Could you put together a car from a bag of parts? What if you could make it so it would go but wouldn't stop? What if the wheels fell off?

But even if I follow a policy, how do I know when the system is secure?

Let's talk about an airplane. It's a high-assurance device. Before it can fly, there are years of review, design and so forth. This high level of assurance is what makes the plane cost a lot of money. I could build a car with the same assurance as an airplane. But that car would cost too much.

So how much assurance is enough assurance?

It's a question of balance. Build [a system as] secure as Fort Knox, and it will cost you a lot of money and take too long to build. You have to figure out the appropriate balance in each case. When security was simply about access control, it was easy. You had a mainframe in a room. And if I couldn't get into a room, I couldn't do any [harm]. But Web applications by definition will never be that safe.

They are enormously complex, but there are endless tools to secure them. You have to understand the security policy first, then use tools, then check against compliance. Ultimately it's pretty simple—it's a matter of understanding your system and setting boundaries.

—Jennifer deJong



Sun's Larry Baron said proper policy is key to security.

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BATTEN DOWN

<continued from page 21

Because the S/390 has security features built in at both the operating-system and the hardware level, it is especially well suited for developers designing secure Web applications. "The OS/390 automatically defines the Internet user as someone who cannot see anything [unless you choose to grant access]," she said. Judging by the recent security breaches, some developers seem painfully unaware of the risks to which they are exposing their companies. "The programming shortcuts they take prove their inexperience," Dietzen said. "Naiveté leads to exposure," he added. The result is applications that are easy to tamper with.

"Every time you allow a user to enter information into an e-commerce application, it's potentially hazardous. You need to be supremely suspicious of all outside requests," Dietzen said.

CHAOS IN THE SHOPPING CART

He attributed the recent reports of the price-tag swaps—users tampering with scripts to "swap" a high price with a low price in a shopping cart application—to an utter lack of such suspicion. "To ensure safety, you should generate an HTML page without any smarts in it, validating the user's input on the server," said Dietzen.

"Validating input on the client, using, for example, JavaScript, gives you faster turnaround time," said Dietzen. "But since the client is open, a smart user can do what he wants with it."

Or, as Larry Baron, senior product manager for Java security at Sun Microsystems Inc., said, "Designing an application [where it's easy to swap price tags] is like saying: 'Here's my ATM card; here's my password; here's my balance.'"

Still, others admit it's just human nature to try to take the easy way out. "It's partly laziness—developers don't want to be inconvenienced," said IBM's Woodbury. "Security really puts you through hoops. It's much easier to write an application and not have to worry about it," she added.

"I understand how these kinds of things happen," said Trip.com's Graese. "But there are some things that you just shouldn't compromise on. Hackers are getting more and more sophisticated, so you have to be more and more careful."

Experts say that securely designed Web applications result when developers are not tempted to take such shortcuts, when they are forced to adhere to a policy or design plan. "Security needs to be part of the initial design of an application," said Woodbury.

She said that the AS/400 is a good platform for implementing Web applications, since security features are built in to its OS/400 operating system and in the hardware itself.

But according to Sun's Baron, security is not really a matter of what platform

the developer works on or which tools are used to do the job. "It is a matter of people, policies and process," he said. "You need a policy and a means of enforcing it."

NO END OF THREATS

Web programming is strewn with other potential pitfalls. Developers say another common way for trouble to crop up is when applications rely on the same interface (the Web browser) for both users and administrators. Although for the developers the concept of the browser as the universal client is a key advantage of Web programming, from a security standpoint it carries with it the potential for harm. With both parties using the same interface, enterprise developers have to ensure that the administrative interface is safe from savvy users who know how to get at it and might alter the application in some way.

Most developers manage that problem not by banning administrators from using that interface, but by securing access. "There is no need to manage the application outside of the corporate intranet," said Dietzen. "Exposing out-

siders [to the administrative interface] is really an act of corporate negligence."

Access is secured by the passwords, and by technologies like token cards. Because they issue single-use passwords that don't require synchronization with the host, they are especially useful for verifying that administrators logging on remotely are in fact who they say they are.



BEA's Scott Dietzen said programming shortcuts lead to trouble.

More difficult to prevent than any other Web threat is the so-called denial of service attack, which has to be shut down at the ISP level. In a denial of service attack, hackers effectively shut down a site by bombarding it with more requests for service than it has the bandwidth to handle. They are in effect installing a kind of time bomb that is difficult to detect. At some later date, the attacker can send a command to all of the "slave" machines, which wake up and start firing streams of information that clog their targets' networks. "It's like taking over the highway and not letting anyone else on the road," said Dietzen. "It makes it impossible to do business."

Although such attacks are obviously disruptive, they are far less damaging than other forms of cyberterrorism, where money is stolen or sensitive information is exposed or altered.

HOW MUCH SECURITY IS ENOUGH?

Makers of application development tools agree that when Web security is breached, it's not for any lack of tools to do the job. "The public key infrastructure of the Web is extremely robust," said Dietzen. Break-ins are nearly always a case of negligence, inexperience and poor programming practices. "Sites that take careful measures and place sufficient emphasis on security will succeed [at keeping hackers out]," said Dietzen.

But now that companies are doing business on the Web, applications will never enjoy the same level of security they had in the past. The current computing infrastructure is light years away from the old days when physical barriers secured systems, said Woodbury. "You simply set a system in a room with a locked door and no entry, and your data was safe," she said. "But we couldn't do business with it," she added. "Business risks have changed." ■

JAAS UP SECURITY ON JAVA 2 PLATFORM

AVAILABLE IN FREE DOWNLOAD, JAAS CAN CHECK ID OF USERS WITH STANDARD PAM HOOKUPS

BY REBECCA ROHAN

Sun Microsystems Inc. has released an additional piece of security—Java Authentication and Authorization Service (JAAS) 1.0, a pure Java implementation of PAM (Pluggable Authentication Modules)—that can check the identification of users with standard PAM hookups. Pronounced "jazz," the APIs bring an additional piece of security to the Java 2 Platform now employed by Linux, Windows NT, Apache Web Server and others.

Java 2 security already included elements such as the Java Cryptography Architecture (JCA) API, the Java Cryptography Extension (JCE) API and the Java Secure Socket Extension (JSSE) API, and based access controls on where code came from and who signed it, but it didn't act as a sentry.

"PAM is definitely an important thing," said Bill Orvis, security specialist with the U.S. Department of Energy's Computer Incident Advisory Capacity Team (www.ciac.org). Orvis said adding PAM to Java "would definitely be good because it means you'd have an established authentication tool to authenticate Java programs. Of course, if it's done wrong, it could create great, glaring holes. If it's done right, applications won't have to do their own authentication—you're not reinventing the wheel."

"JAAS can plug into any Java Virtual

Class Summary

JndiLoginModule	The module prompts for a username and password and then verifies the password against the password stored in a directory service configured under JNDI.
NTLoginModule	This LoginModule renders a user's NT security information as some number of Principals and associates them with a Subject.
NTSystem	This class implementation retrieves and makes available NT security information for the current user.
SolarisLoginModule	This LoginModule imports a user's Solaris Principal information (SolarisPrincipal, SolarisNumericUserPrincipal, and SolarisNumericGroupPrincipal) and associates them with the current Subject.
SolarisSystem	This class implementation retrieves and makes available Solaris UID/GID/groups information for the current user.

JAAS security class libraries are for both Windows NT and Solaris.

Machine," said Larry Baron, senior product manager for security, Sun Software Products and Platform. "The reference implementation is a binary product people can use, but in the grander scheme of things, we want to propagate a standard set of APIs. You can use them anywhere you have a need to authenticate a user that's running a service on a virtual machine."

JAAS, available in a free download, lets you base access control policies on individual users, groups or roles. Once a user signs on and is authenticated, the system carries the user's credentials so he doesn't have to sign into different areas throughout the day.

Naturally, cross-platform standards such as the PAM API mean lower development costs, not only because the developer doesn't have to write a new application programming interface for everything he wants to hook up to, but because so many things he wants to hook

up to are widely available. "PAM can use a number of different kinds of log-in services with different authentication technologies," said Baron, citing RSA, DCE, Kerberos, S/Key and SmartCard as examples.

"We have sample source code for all those APIs," said Baron, "but if someone wants to build their own black box, that's OK. The APIs are the key—that's where we all win. If a new Smart-

Card or other technology comes out, and everybody had their own home-grown APIs, they would have to graft it in on a custom basis."

But, Baron added, "it's much better to use the reference implementation. As more and more people use it, it becomes more rock-solid. If everybody does their own implementation, it's possible that security-related issues might propagate through their system. With more people using the same implementation, it gets well tested." A link on the Web site lets users report problems.

Under the licensing terms, Sun asks programmers who extend the API to make their extensions public. "If the extension gains acceptance, it would then roll into a future release of JAAS," said Baron.

You can get JAAS from (java.sun.com/products/jaas). Sun expects to release a for-pay JAAS JCK (Java Compliance Kit) to test security later this month. ■



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WHAT HAPPENED?

Jiminy Crickets! You turn away for a week or two and the whole world changes! Between the beginning of December 1999 and early February, the two leading Java development environments changed hands. Symantec Corp.'s Visual Café was acquired by a start-up I shall discuss shortly, while Borland/Inprise—the entire company that is—was acquired by Corel. Corel? The same folks who make Corel Draw? Well, um, yes.

The Corel acquisition is unusual and yet somewhat of a family reunion. You recall perhaps that Borland had close relations with Novell. Novell's office suite, designed to compete against Microsoft's Office, contained Novell's then-recently acquired WordPerfect along with Borland's Quattro Pro spreadsheet and Paradox database. Novell eventually bought Paradox from Borland. When Quattro Pro was no longer core to Borland's redefined mission, Quattro Pro ended up in Corel's hands. Later, the rest of the products found their way to Corel's Ottawa headquarters. The bundle is now called WordPerfect Office 2000 and is indeed a remarkable—albeit widely ignored—product suite.

After unloading these products, Borland found its focus again selling enterprise development tools. It brought out

Delphi, C++ Builder and the highly regarded JBuilder product. And then the company acquired Visigenic Software, a start-up that sold its own implementation of CORBA. During the Visigenic acquisition, Borland renamed itself Inprise, with a new focus “inside the enterprise.” Inprise's fortunes were decidedly on the rebound of late: revenues, profits and stock prices were all going up. This was due to the quality of the Inprise development tools and to its CORBA story. The Visigenic CORBA server, named VisiBroker, was integrated into the development products in ways that made deployment considerably simpler than many of the packages available from CORBA-only vendors.

However, the quality of CORBA implementation, the superior development environments and the new name—all this meant nothing to Corel. Inprise was bought because it recently ported its dev tools to Linux. Linux! Corel's stock has zoomed lately as a result of the company's embrace of Linux. And with the higher-valued equity, Corel bought Inprise to sell the Borland line of dev environments to Linux programmers. Nobody from Corel was willing to go on record about what would

happen to VisiBroker. There is good reason for this. The idea of buying a Linux box to run a CORBA server is a bit perverse. Add calling Corel for tech support and the whole scenario slips completely into the ridiculous.

I suspect when Corel figures out what to do with its new stepchild, we will hear all about Corel's enterprise strategy. This may take a while, folks.

Meanwhile, middleware vendor BEA Systems Inc. purchased the Visual Café Java development environment from Symantec. Visual Café—a product in most ways inferior to Borland JBuilder—is itself a Borland derivative. The Symantec line of development tools was devised by Eugene Wang, who left Borland with cops and lawyers looking into charges he took trade secrets with him.

Wang had served as Borland's go-to guy for getting the company to the forefront of the C++ crowd. Wang left Symantec after a few years having recognized what everyone else already knew: Software development is not central to Symantec's business. Symantec tools are glitzy also-rans in both the C++ and Java development environment markets. The sale made sense for Symantec. But how about BEA? The company joined with venture capitalist Warburg, Pincus to fund a new corporation whose mandate

is to create tools that accelerate the development of software for electronic commerce. At the heart of this mission is Java. And so a Java environment was needed. Enter Visual Café. Interestingly, the head of the Warburg Pincus fund is Alan Baratz, the former president of Sun's Javasoft unit. You would think that with this kind of pedigree the new, still unnamed company would be destined for great things. And indeed it might be. But you have to admit its avowed mission—“to create simple-to-use software ‘power tools’ that allow nearly any developer to design and assemble e-commerce software that can be customized on the fly to adapt to users' needs”—smacks a bit of over-reaching. I await product delivery before I buy in.

The point, though, is that BEA is moving beyond just being a middleware provider. It sees a need to innovate beyond its own products and into an area that holds promise: electronic commerce. For this kind of foresight, BEA has been rewarded this year. Its price is up twentyfold during the past 12 months. And if BEA executes as well on this project as it has with WebLogic, things will be exciting. As for Corel/Inprise, though, I'm not so sure. Good execution may not be enough. ■

Andrew Binstock is principal analyst at Pacific Data Works LLC. Reach him at abinstock@pacificdataworks.com.

SLEIGHT OF HAND

One after another, companies in the Linux business are going public. And with each IPO new records are set. Fortunes are made overnight for company founders, early investors and open-source hackers. Market valuations are skyrocketing beyond expectation, beyond logic, beyond explanation. And everywhere, programmers scratch their heads: “How can a company be worth that much—worth *anything*—if its business plan is based on giving away its products?”

WHAT'S THE REAL BUSINESS?

We are confounded, I believe, because our thinking is too narrow. To find the logical sense at the center of the economic model, we need to broaden our understanding of what business the companies are in.

Consider Amazon.com. Every quarter when it announces financial results, more industry watchers jump on the criticism bandwagon. Yes, on average, Amazon.com loses a little money on each book it ships. So if you narrowly define Amazon.com as a company that's in the business of selling books, it is a losing proposition. But Amazon.com is also in the business of sending out occasional newsletters about new offerings. Of recommending books, music and movies to members based on their previous purchases. Of amassing a highly loyal base of customers who log on to the compa-

ny's Web site frequently. Is there a business here? I think there is. But it's not the traditional bookselling business.

So don't be distracted by the fact that a company gives away its “main product” or offers it at a loss. Take a step back and see what business the company is really in.

CARD TRICKS

Did you ever learn to do card tricks? The essence of magic, at least the kind of magic I tried to master as a kid, is misdirection. The magician directs the audience's attention to the right hand as he palms a card with his left.

There's a fair bit of misdirection in the open-source software industry, too. In response to challenges from financial reporters, investors and customers, Linux vendors all fall back on the same harmless bit of misdirection: “Yes, we distribute our product at no charge. We'll make our money in service and support.”

The claim satisfies questioners. But it's not the truth, or at least not the whole truth.

Linux vendors sell Linux CDs. Check out their Web sites and you'll see the truth. A SuSE Linux 6.3 CD will set you back \$49.95. Red Hat Linux comes in standard, deluxe and professional editions priced at \$29.95, \$79.95 and \$149.95. Visit Corel's online store and you'll pay \$59 for the standard edition of Corel Linux or \$89 for the deluxe edition.

In contrast, Microsoft charges \$219 for a Windows 2000 upgrade. I've seen rebates and vendor promotions reduce the price to as little as \$79.

Thus, the retail prices of Linux and of Windows 2000 are comparable. Yes, you can download Linux for free if you're patient enough. On the other hand, Microsoft has, according to chairman Bill Gates, invested more than \$1 billion of engineering effort in Windows 2000...not to mention the overhead, advertising, marketing and manufacturing costs. I'm certain Red Hat will earn more profit on each copy of Linux it ships this year than Microsoft will earn on each copy of Windows 2000 it ships.

Red Hat is one of the Linux companies claiming it will give away its product and make money on service. But here are the figures from its own financial statements: It made \$3.37 million selling software in the three months ended Nov. 30, 1999, compared with \$1.62 million on services. That's a 2-to-1 margin. VA Linux Systems reported that just 1.5 percent of its total revenues came from its Professional Services operation. Make no mistake: Linux vendors are in the business of selling products for profit.

THE REAL KEY

Of course, profits are elusive. Advertising, start-up and development costs outrun revenues. And barring some unanticipated change in the way market

shares shake out, costs will continue to outpace revenues.

The Linux vendors are betting they'll achieve profitability through upgrade revenues.

Here's how it works. You acquire a product—TurboLinux, say—for a negligible cost. You learn to use it. You visit TurboLinux's Web site and download some useful utilities. The TurboLinux support team answers some questions quickly and accurately. Now it's time to roll out your Linux solution across the whole company—multiple servers, maybe with clustering or advanced features. Which Linux will you buy?

Every Linux vendor has a loss-leader entry-level edition. And every one has high-priced proprietary upgrade editions to offer you once you're in their camp. The Linux industry is taking a page from the highly successful cocaine industry: “The first hit's free, kid.”

Take these three factors—wider definition of core business, revenue from product sales, and upgrade revenues based on the lifetime value of a loyal customer—and the open-source business starts to make sense.

You can make a lot of money selling free software. ■

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WINDOWS 2000: STILL THE AGE-OLD QUESTION

In conceiving this column, my editor and I discussed two major points: One: the inevitability of my Pulitzer nomination; and two: keeping track of new development tools for Windows, especially those from Redmond. So, my having already penned two of these masterpieces necessarily put a slight tremor of frustration into his tone as he asked me why there still had been no mention of new dev tools.

Quite simply, it's because all the hottest, most anticipated new tools are just that: anticipated. The buzz on the street is all about Windows 2000; and dev tools for this happy environment are still a ways away from the shrink-wrap. To keep my editor's blood pressure in line, however, I shall endeavor to share what I know.

From Microsoft, new tools will soon arrive in the form of an upgraded Visual Basic, Visual Studio and, of course, the much-vaunted Windows DNA 2000. Microsoft CEO Steve Ballmer recently unveiled some specifics about Visual Basic and Visual Studio (both moving to version 7.0) at the VBits trade show. As expected, one of the first indirect announcements was that Visual Studio 7 would probably not be hitting its target release date of spring 2000.

On the upside, however, Visual Studio 7 will ease the burden of developers trying to integrate Windows 2000's XML penchant with existing Windows standards, especially COM+. Developers should also be able to create Visual Basic GUI items, such as forms, and publish them directly to the Web. And even

SD TIMES

WINWATCH

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keener, Microsoft is claiming support for dragging and dropping *inside* the browser.

On its own, Visual Basic 7 looks to be adding some muscle as well. In an apparent quest for increased corporate acceptance,

the new release will add advanced features into its mix, including support for inheritance, encapsulation and polymorphism. You'll also gain the ability to exploit explicit free threading and structured exception handling. This is a long way from Visual Basic's glorified macro-language roots. Microsoft explains the new features as its way of empowering Web developers within the Visual Studio framework. Considering that Redmond made absolutely no new announcements regarding its support for Java, I suppose that closes the question of Microsoft's support for open-source technologies—and yes, I know that Java is Sun's property, but there's at least a

perception that it belongs to the open-source community.

On the XML front, though, it's an entirely different story. As touched on in an earlier column ("Will Microsoft Have Another Do-Little Year," Feb. 23, page 31), Microsoft's upcoming Windows 2000 DNA development architecture is heavily concentrated on XML—a trait shared by the entire Windows 2000 platform, and Microsoft is making noise about its intent to stick to established standards on this one. We'll see. Microsoft intends to combine Windows DNA with Visual Studio, Windows 2000 and the upcoming 2K generation of BackOffice applications to create an extremely powerful, flexible XML-oriented Web development platform. Why does this not sound open to me?

As you may have noticed, my feelings on this are a bit mixed. On the one hand, even the early press releases are promising a level of robustness and integration that I just don't see from anyone else when it comes to XML and Web development in general. Microsoft seems to have standardized on XML as the crux of its software interoperability strategy for Windows 2000. For someone who really needs to get something done and working, this could be a real boon as long as they don't mind Microsoft A to Z, from soup to nuts.

But on the other hand, you just know

this will be about as open as the planning meeting for the next *Star Wars* movie. Microsoft is going to encapsulate XML in a proprietary cocoon of power and easy integration and then hope we don't notice the extra stickiness.

And it's not as though Microsoft doesn't have competition, even on the Windows 2000 front. IBM, Sun and longtime XML champions such as BlueStone all sport development tools, database hooks and application servers that interoperate not only within their own brand names but with each other as well. And where Microsoft has chosen to put Java in a bowl next to the back burner, none of these other vendors has followed suit. Most are trying to combine the two, which has greater long-term promise.

The question here will be the same as it always has been: Can third-party challengers provide as much functionality on the Windows 2000 platform as Microsoft? Or will it be a slight features trade-off with some makeup in the reliability department? While the question remains the same, only beta testing and time will provide the answer. Now where's my Pulitzer? ■

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- **Formula One has a lightweight footprint.** System requirements for Excel 2000 include 146 MB of hard disk space. A Formula One JAR file is approximately 1 MB.
- **Formula One writes files optimized for the Web.** Formula One can save files up to 90% smaller than Excel's in some cases. Formula One can even distribute spreadsheet data in any client environment: HTML for thin clients, Excel for Excel clients, or live spreadsheet-powered applets for "heads down" users who require robust interfaces.
- **Formula One is 100% Pure Java and only requires the proper virtual machine to function.** Excel requires Windows to operate.
- **Formula One is built in the Java programming language and is ideal for widespread distribution on the Web.** Excel and Office Web Components are designed for use behind a firewall and require Microsoft Office to be installed on all desktops.
- **Formula One's architecture and JDBC methods enable it to be used with a wide variety of database and application servers.** Excel can't.
- **Formula One provides a JavaBean and applet with an API of more than 400 properties, methods, and events.** Excel is not an API-driven application and can not be used as a component in a Java application.



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XML INTEGRATES WEBS AND DATABASES

If you are wrestling with better Web/database integration, now is the time to take a careful look at two Extensible Markup Language (XML) developments called SOAP and Blocks. XML is the ability to add structure to databases, much in the same way HTML brought structure to documents. The idea was to allow anyone to design a schema to organize your data in some meaningful fashion, to enable searches, sorting of results and other useful activities.

There are now hundreds of XML products listed on the Xml.com Web site, including products that parse and author XML Web pages, set up XML databases and develop XML applications. But two efforts that build on top of XML are worth mentioning here: the Simple Object Access Protocol (SOAP) and Invisible Worlds' Blocks protocol.

SOAP is a set of remote procedure call conventions for using XML for client/server interactions across a network, using HTTP protocols as the transport. All requests and responses are coded using XML documents. It was developed over 1999 by Microsoft and UserLand Software and submitted to the IETF as an Internet Draft last December: search.ietf.org/internet-drafts/draft-box-http-soap-01.txt.

Blocks is a more complex architecture for managing metadata. It consists of programs to examine and transform the data and then apply and store these transformations as structured objects or blocks. A series of Internet Drafts describing the architecture, protocols and sample programs were submitted in January: www.mappa.mundi.net/Internet-Drafts.

Up until now, databases and Web pages were an unhappy marriage. There were several ways you could use Web forms to query and display your data, but for the most part things were messy, complex and required some heavy custom programming. If you are doing this now, chances are you are using Perl scripts or JavaScript to perform queries and format the results for your Web pages.

Computer Associates' Opal was one solution that implements Web access to mainly mainframe-based data. The trouble was the software was more of a graphical interface to access data than a means to provide any insights into data structures. Plus, Opal was a closed system and ran only on Windows platforms.

Both Netscape and Microsoft tried a few years ago to introduce some order into this chaos with different and incompatible standards for dynamic HTML.

Neither effort went very far, and both required their own browser to view the resulting pages. The problem is that you need more than adding just a few tags to the HTML markup language to display and manipulate data on the Web.

That's where these two new efforts come into play.

SOAP and Blocks both go about adding some depth to solving the problem of querying databases via the Web. They aren't really markup languages, but they leverage XML in interesting ways and define separate and incompatible architectures and protocols so that you can build more powerful Web-based applications. While they are similar in their intent, they are very different approaches.

A good example of the power of SOAP can be found at UserLand's demonstration Web site, EditThisPage.com. Here anyone can set up their own Web site within a few minutes, by using the tools that are available inside a standard browser window. No more bringing up an HTML editor, saving the pages to your local drive, then FTPing these pages up to your Web site. But this is more than just a customized home page offered by numerous "community" sites like GeoCities or Tripod. You can organize Web sites that automatically generate indexes of documents, or create Web logs and search pages, too. I had some trouble getting beyond the basics, but that may be due to me and not to the product. But I

can see the utility of SOAP and think it is worth exploring further.

Blocks is geared more toward the skilled programmer and also has set its sights on tackling some very big data structures, such as the Securities and Exchange Commission EDGAR corporate filings and the documents sent to the U.S. Patent Office. These databases contain terabytes of unstructured documents, and Invisible has figured out methods to parse all this into some meaningful structure. You can search those databases to determine which corporate boards of directors a certain individual belongs to.

Both SOAP and Blocks are still very new efforts, but both have attracted many developers and have a wide range of resources at their respective Web sites, Scripting.com and Invisible.net. While the Web/database problem is still a hard one, these standards-to-be show the power of using XML in new and powerful ways to help make it easier to develop applications.

Should you try out either of these efforts and build something you want to tell me about, I'd love to hear from you.

(Editor's Note: Mr. Strom has a paid advisory position with Invisible Worlds.) ■

David Strom is president of David Strom Inc. and editor of the Web Informant newsletter. Reach him at david@strom.com.

COIN NO LONGER HIDDEN IN PALM

It would take a Palm reader to know what the future holds for the 3Com spin-off. But one thing already is clear: Software development will get a huge boost from the broad acceptance of handheld devices.

I know all the techies who work for you thought they were really cool, because they stopped carrying address books, planning calendars and business cards years ago. But now that it's been amply demonstrated that folks out on Main Street want them too, the Palm organizer goes from new toy to serious market opportunity.

According to one company spokesman, who could not speak for attribution due to the quiet period mandated under IPO rules, there already are some 50,000 software developers signed up to develop for the Palm OS. "It's a rich environment for software development that Palm would never do," the spokesman said. Further, a study by IDC shows that use of the handheld devices is expected to more than triple, from 5.4 million units in use in 1999 to an anticipated 18 million units in use in 2003.

According to Palm's spokesman, the best thing about the IPO is the platform's new visibility with the general

public. And once a broader market of consumers buys into it, the doors are wide open for software developers to extend and enhance the Palm platform.

The public at large is no doubt unaware that 3Com has been licensing the platform since 1996, and that there has been an active developer support program in place since the day the Palm was introduced. Frankly, they don't care.

What they will care about now, of course, is functionality. Once they buy it, they'll want to know what they can do with it. And, why they can't do more.

From a pure market perspective, the Palm Inc. IPO is a bit disingenuous. Yes, shares are floating, but 3Com Corp. retained 95 percent ownership in the spin-off. It can be likened to someone still living at home even though he has graduated from college. Some investors bought into Palm and made a quick buck. It opened at \$38 per share and topped out at \$165. However, other investors bought into 3Com, running the price up almost 60 points in the week leading up to the IPO, and then taking their profits: A week later, it was trading in the 60s. Some traders used their 3Com profits to buy into Palm. So it's a muddled picture, but some analysts be-

lieve the two prices will settle out somewhere around \$70 per share.

The future success of Palm, of course, lies in the further development of applications and functionality for the platform. This spells opportunity, as developers race to bring out new products and grab a share in what is sure to be an exploding handheld device market.

SWEEPING THE STREET

Computer Associates International Inc. has agreed to buy Sterling Software Inc., a maker of business management software, for \$4 billion in stock. Computer Associates says it will trade 0.5634 of its shares for each share of Sterling, valuing the Dallas-based company at about \$39.30 per share, a 14 percent premium to its closing stock price on Feb. 11. Computer Associates said the deal, the largest ever between software companies, will allow it to broaden its range of products and services in the area of storage management software.

"We are extremely focused on being the leading provider in storage and network management, business intelligence and portal solutions," said CA president and CEO Sanjay Kumar in a statement. Sterling Software has more than 20,000 customers who use its software to manage their traditional computer networks as well as their electronic commerce systems. The company's key software product pro-

vides access to information stored in a company's database the same way an Internet portal points Web users to specific information on the Internet. Founded in 1981, Sterling Software has 3,700 employees and posted 1999 sales of \$807 million. Computer Associates has 18,000 employees worldwide and had revenue of \$6.3 billion for the year ended Dec. 31, 1999. The Islandia, N.Y.-based CA said the deal is expected to add to earnings per share, excluding any one-time charges.

In other news, RSA Security Inc. intends to increase the funding of RSA Capital to \$100 million. RSA Capital is a wholly owned subsidiary of RSA Security that will invest in companies delivering the infrastructure, tools and applications designed to accelerate the growth of e-business. RSA Capital will seek to leverage the successful track record of RSA Security's investments in VeriSign, Netscape, CyberCash and other leading companies, and to provide RSA Security with a window into the evolving e-business technology and market landscape. Also, the RSA board has authorized the company to buy back up to 8 million shares of its common stock, representing a 4-million-share increase over the repurchase authorization in October 1999. ■

David Rubinstein is executive editor of SD Times.

PIRACY

<continued from page 1

anti-piracy area. But, he added, there is organized piracy around the world, and battling it takes vigilance.

"As soon as a publisher comes up with a protection mechanism, hackers quickly come up with ways around it," Flynn said. "There are a lot of people out there. Vendors must constantly stay one step ahead."

Part of the problem, Flynn said, is that in certain circles, pirates are venerated as heroes. "We need to change the perception that these guys are Robin Hoods. It's not just Bill Gates losing money. [Piracy] hurts the smaller companies even more because they can't afford the loss. The small guys are entitled to be compensated for years of effort and money they've put in" to developing an application, he said.

What often happens is that final beta versions of software appear on the Internet and frequently "scoop" the final release by weeks. When that happens, a huge amount of revenue expected upon final release is lost.

Yet ParaSoft Corp.'s executive vice president, Arthur Hicken, sees an unintended upside. "Some amount of pirated software leads to real sales, as sort of demo-ware," he said, adding that because ParaSoft is a small company, "to see that someone bothered to pirate our software was kind of a pat on the back. It's kind of flattering." ParaSoft uses a sophisticated machine-ID piracy protection scheme on its source-code testing tools.

Hicken explained that because software evolves so quickly, someone pirating an older version of an application "won't have all the new cool stuff."

There are techniques commercial developers can employ to limit piracy. Some employ a hardware key, also known as a "dongle," which must be present on the machine in order for the application to run. Some vendors use serial numbers, where the correct code must be entered to install. Another level of copy protection uses a process where, during the installation procedure, the software generates a "machine ID" code, keyed to the same unique key of the target hardware. That code must be reported back to the software vendor, which can then generate an un-

lock code good only for that single installation.

Microsoft, according to SIIA's vice president for anti-piracy programs, Peter Beruk, has the largest proportion of the piracy problem simply because it is the largest software vendor. For its part, Microsoft has taken steps to make counterfeit software easier to identify and to assist resellers and OEM system builders in distributing genuine software with new anti-piracy technologies and an Internet monitoring program.

"It seems we are in a perpetual cat-and-mouse game with counterfeiters," Jackie Carriker, group manager of anti-piracy efforts at Microsoft, said in a statement.

ParaSoft (www.parasoft.com) uses several different anti-piracy techniques, including license expiration dates, limits on the numbers of networks and users, and password codes to effect installation and use. As Internet sellers since 1993 via FTP, the company realized the potential for abuse and devised its locking mechanisms.

"We had one person crack [the code] about six months ago," said Hicken. "We know where the weaknesses are, and

we beefed up the mechanism."

Hicken said ParaSoft, which sells primarily to businesses, is not as vulnerable to piracy, despite its efforts to secure the software. "You can't go to a business and convince them to use unsupported, pirated software," Hicken said.

However, he is opposed to the labyrinthine types of security that could turn a potential customer toward a competitor. "Instead of a user using an application, you have a systems manager with a computer problem," Hicken said. "You must have the ability to back up the software and copy it onto a number of machines in real business."

Brien Witkowski, president of Wise Solutions, which markets installation software, uses a serial number control to prevent piracy, making the chances of someone's being able to grab the serial-number code, and thus use the software illegally, as 1 in 400,000.

"We don't put in a whole lot of controls beyond a serial number," Witkowski said. "We sell to the development community, and you don't get a lot of software theft."

Witkowski echoed Hicken's sentiments, saying, "We'd rather

make it easier for our customers to use it, instead of requiring a dongle or other hardware, and have increased technical support."

As an example, Witkowski cited Windows Installer technology. "There is a published file format for it," he explained. "If you create a file with this format, our engine will install it." Because it's open architecture, he said, it's difficult to secure. According to Witkowski, Wise is now working with Microsoft to tighten up software accessibility on a future release of Office 2000.

Another answer could come from an unlikely source—the ASP model. "If a publisher has a product that's suitable for an ASP, it removes the shrink-wrap from the equation," SIIA's Beruk said. "The ASPs are building in security that will make it virtually impossible to download."

Beruk said the SIIA will bring in the federal government to prosecute cases, because piracy groups have no funds and a civil judgment would be virtually unenforceable.

"As an educational message, it shows that the industry won't sit idly by and watch [piracy] occur," Beruk said. "Nor should it."

TEMPLE UNIVERSITY SETTLES COUNTERFEIT SUIT

The Business Software Alliance (BSA) has announced that Temple University paid the BSA \$100,000 to settle claims related to unlicensed software programs on its computers.

In addition to the settlement, Temple University has agreed to destroy all unlicensed software, purchase replacement software and strengthen its software management policies.

"We have a strong respect for the need to protect intellectual property rights," said George Ingram, Temple's associate vice president for university relations. "Like many universities, Temple has a decentralized work force that interacts with students, faculty and others. We are now implementing new procedures to document our software compliance in the future."

College campuses and universities around the country have become a hotbed for online piracy. Recently, a student at the University of Oregon became the first person criminally charged under the Net Act for software piracy violations over the Internet. ■

DEFECT-FREE

<continued from page 1

application works. The tool then produces a report containing quantitative and graphical analysis of factors like programming constructs, portability, globalization and structure, which can be used for early problem detection and remediation, and improved risk management.

With this data, said the company, organizations can resolve memory leak problems, manage partially undocumented code history and build in filters to help find specific problems.

With its new Magnify service, introduced in early March, Software Emancipation is essentially running the Discover reports themselves, saving development shops from purchasing and learning how to use the tool, especially if it's going to be used only once or twice.

"Magnify can be used for code auditing during company mergers," said Boes, in addition to being used during the development process. During the development process, the company recommends performing

a Magnify analysis after the bulk of coding is complete, but before alpha testing.

The process is straightforward. First, provide Software Emancipation access to the source code.

"You can send it to us, or provide us access to your network so we can pick up the code," said Boes, adding that for companies concerned about security of their source code, Software Emancipation will send a technician on-site to run the tests. The cost is \$30,000 if the source is sent to Software Emancipation or \$50,000 if a technician is dispatched.

After a two-to-three week period, Software Emancipation will provide a report that analyzes the code, identifying potential weaknesses ranging from memory leaks to situations in which a type conversion narrows numerical precision.

Magnify also picks up on poor programming practices, according to its technical documentation, such as inline assembly to situations where the level of nested controls exceeds a predefined limit. Those limits, designed to help companies

maintain good programming practice, are initially set by Software Emancipation based on their own quality metrics but can be adjusted by the customer, said Boes.

The report also includes written analysis and presentation by a Software Emancipation software analyst. "This differentiates us from other defect analysis companies," said Boes, claiming that other vendors' reports are generated programmatically.

The third component of the Magnify report is a comparison of the customer's source code to other code analyzed by a module of the Discover test suite called QA Cockpit. For each of the defect areas, the analysis shows how well the customer's code stacks up against industry norms.

Although Boes touted the benchmarks as having a broad base, the company's research study was limited to approximately 50 projects ranging from 11,000 lines of code to 1.3 million lines. According to Boes, the minimal useful size for a Magnify code analysis is 500,000 lines of source.

IT PAYS TO DISCOVER

In late January, Software Emancipation updated the Discover test suite itself to version 7.2. According to the company, the new release contains more than 150 improvements. In addition to enhancements in language support, comprehension and re-engineering, the company claims the update provides several major changes to assist customers with their transition from traditional quality-control processes toward quality assurance.

Quality assurance is fundamentally different from quality control, said Boes, comparing the software development process to automobile manufacturing. "At first, you built a car, and then you tested it after it was built, and corrected any flaws. Then Ford introduced unit testing. You built and tested the engine, before putting it into the car. Then the Japanese integrated quality controls into the design process, to design for quality upfront. That's where software development is going, too: designing for quality." ■

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